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Timber Sale Planning and Analysis System: A User's Guide to the TSPAS Sale Program

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Default
Database



TSPAS_SP



ID Team



Sale
Database



Reports

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Research Summary

The TSPAS Sale Program (TSPAS_SP) is intended to be used by timber sale planning teams to design

and analyze timber sales, in light of both long-term timber and nontimber implications. TSPAS_SP encourages development of several timber sale alternatives, differing in terms of cutting units harvested and/or management of those units subsequent to harvest. TSPAS_SP can be initially used several years before a timber sale is offered and used later to update sale information as plans and data become more refined and specific. TSPAS_SP has several features, including provisions for two methods of stumpage appraisal, multiple timber and nontimber products, multiple entries in cutting units to approximate uneven-aged management in addition to even-aged management, and reports that provide a wide variety of information on stumpage appraisals and overall management summaries reflecting present net value calculations.

TSPAS_SP is a menu-driven, interactive computer program operating on the Forest Service's Data General (DG) computer system. Users proceed through a series of computer screens, beginning with one that collects general sale information, such as location and purpose. The user then describes timber harvest prescriptions for all cutting units in a sale alternative, both for the current entry and future management. Cutting units are appraised. Other sale alternatives are developed. Nontimber outputs are described, as are specified road costs and K-V activities. TSPAS_SP utilities provide copy and delete functions, the ability to switch to another sale, and more. Seven general types of reports provide information ranging from stumpage appraisal data for individual cutting units to present net value for the current sale and regenerated stand. Users control output reports selected.

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Introduction

Following the 1984 General Accounting Office and Congressional Research Service reports on below-cost timber sales, national attention focused on financial and economic aspects of timber sales developed by the U.S. Department of Agriculture, Forest Service. Two outcomes resulted. First, timber sales must be defensible; there must be a reasonable explanation as to why a sale is designed in a particular way. Second, the Forest Service now participates in a timber sale program information and reporting system known as TSPIRS—Timber Sale Program Information Reporting System. The TSPIRS system develops three annual reports for the U.S. Congress—the Financial Account, the Economic Account, and the Employment, Income, and Program Level Account. The Economic Account focuses on the long-term timber and nontimber considerations associated with the current year's harvest. Unfortunately, there is no Service-wide analytical tool available to assist timber sale planners in thoughtfully designing and evaluating timber sale alternatives. Therefore, the reasons and rationales for why planners took certain actions are not consistently available. Information on long-term timber and nontimber considerations is often developed after the sale took place, possibly by persons not associated with the timber sale.

More recently, the Forest Service adopted a set of procedures outlining analysis requirements for timber sale projects (FSH 2409.18). The procedures call for financial and economic analyses, analyses of timber and nontimber outputs, analyses of existing and regenerated stands, and more. Appraisal-related procedures include an accounting of K-V deposits, purchaser road credits, estimates of saleability, and more. These analytical requirements are formidable.

TSPAS (Timber Sale Planning and Analysis System), a computer software package, addresses these problems. It consists of two distinct programs, the TSPAS Default Database Program (TSPAS_DDP) and the TSPAS Sale Program (TSPAS_SP), both designed for use on the Forest Service's Data General (DG) computer. TSPAS_DDP constructs and supports default databases utilized by TSPAS_SP. A default database provides much of the structure and geographical specificity, cost information, management prescriptions, nontimber responses, and other data used in TSPAS_SP. TSPAS_DDP is intended to minimize data entry by the TSPAS_SP user. TSPAS_SP is intended to facilitate the simultaneous analysis of timber sale design and development of information for the TSPIRS Economic Account and to meet analytical requirements of project-level analysis. To do

this, TSPAS_SP emphasizes quick and easy development and evaluation of alternative timber sale designs. Using TSPAS_SP, local sale planning teams can design efficient timber sales in light of long-term timber and nontimber implications. This User's Guide covers operation of TSPAS_SP only.

Overview

TSPAS consists of the TSPAS_DDP and TSPAS_SP computer programs needed to develop and access two relational databases. Cutting units and sale alternatives are TSPAS_SP's basic building blocks. TSPAS_SP is interactive, menu-driven, and has several features that make it particularly well suited to analysis of timber sale projects. Procedures used to implement TSPAS_SP are relatively straightforward and flexible. Appendix A Glossary provides a listing and description of special words and terms used in this manual.

Databases

The main workhorses of TSPAS are two categories of relational databases: the TSPAS Default Database and the TSPAS Sale Database. The TSPAS default database consists of one or more unique default databases, each having its own name. Default databases are developed by TSPAS_DDP and contain default information the TSPAS_SP user must eventually provide—such as sale prescriptions, nontimber outputs, and species names. Though several default databases may be available to a TSPAS_SP user, only one is used in a particular timber sale. A default database can be applicable to an entire Forest Service Region, several National Forests within a Region, a specific National Forest, an appraisal zone, and so on, depending on how it is constructed. A default database must already exist before TSPAS_SP is executed. Each default database is built and maintained by a TSPAS Information Manager, commonly a forest-level economist or operations research analyst. The TSPAS Information Manager is an excellent source of information about TSPAS_SP, if problems arise. Additional information about default databases and TSPAS_DDP software can be found in Jones and others (in press).

A default database can reflect either the residual value (RV) or transactions evidence (TE) method of stumpage appraisal. The TE method, in turn, can be based on an equation approach (with coefficients) or an adjustment approach (with adjustors). Regardless of the approach, the underlying data and relationships are referred to as a "TE model." A default database using the TE method of appraisal may contain one or more TE models, among which the TSPAS_SP user chooses.

The TSPAS Sale Database consists of one or more unique sale databases, each portraying an individual timber sale, created by TSPAS_SP as sale-specific information is provided. To facilitate this process, TSPAS_SP displays information stored in the user-selected default database as possible responses to information requests. The user accepts default information or enters more accurate, sale-specific information. In the early stages of sale planning, the user may choose to accept much of the default information to quickly develop and evaluate alternatives. More exact information could be entered as the sale's design becomes finalized. A unique sale database is developed for each timber sale planned with TSPAS_SP.

The listing below illustrates one relationship between TSPAS databases:

<u>TSPAS Default Database</u>	<u>TSPAS Sale Database</u>
Default Database 1 (RV)	
Default Database 2	
TE Model 1 ==>	Sale Database 1
TE Model 2	
Default Database 3	
TE Model 2 ==>	Sale Database 2
==>	Sale Database 3
TE Model 3	

In the case above, the TSPAS Default Database consists of three Default Databases (named Default Database 1, 2, and 3). Default Database 1 is for use with RV appraisal, but Default Databases 2 and 3 are tied to TE appraisal. TE Model 2 is used in Default Database 2, and 3, but TE Model 1 is available only with Default Database 2 and TE Model 3 is available only with Default Database 3. The TSPAS Sale Database contains three sale databases (named Sale Database 1, 2, and 3). Sale Database 1 used Default Database 2 and TE Model 1, while Sale Databases 2 and 3 both use Default Databases 3 and TE Model 2.

Building Blocks

TSPAS_SP keys on two analytical building blocks: the *cutting unit* and the *sale alternative*. TSPAS_SP is intended to help evaluate and compare alternative timber sale designs, called sale alternatives. The user is encouraged to design and explore several sale alternatives. Every sale alternative consists of a collection of cutting units, each complete with plans for management (prescriptions) and information regarding consequences. Sale alternatives differ because they contain different cutting units, different management prescriptions for the same cutting units, or some combination of different units and different prescriptions. To fully describe a sale alternative, the user enters information for the sale in general (description and outputs), information for each cutting unit (prescriptions, appraisals, and supplemental management activities), and information for the sale alternative in general (roads, K-V funding, USFS costs, and nontimber outputs).

Features

TSPAS_SP has six noteworthy features:

Timber Products—TSPAS_SP accommodates multiple timber products (such as pulpwood, sawtimber, and peelerlogs) from the same timber sale. Users specify a “primary” timber product, either directly or when an appraisal model is selected. The primary product is identified in output reports and is the first product appraised. Secondary timber products are specified by the user and are aggregated and reported in total dollar value only.

Even-age and Uneven-age Management—TSPAS_SP accommodates both management strategies by permitting multiple harvest entries in a cutting unit. Uneven-age management simply uses more entries, spaced farther apart in time, than those of even-age management.

Stumpage Appraisal—TSPAS_SP accommodates stumpage appraisal of the primary timber product by either residual value (RV) or transaction evidence (TE), depending on how the default database is constructed.

Within TE, TSPAS_SP can handle either the equation-based approach or the adjustment-based approach, depending again on default database construction. Secondary timber products are appraised by the user providing appraisal information directly.

Nontimber Outputs—TSPAS_SP provides opportunity to include all important nontimber outputs directly into timber sale analysis. Nontimber outputs can be measured in dollar values, physical units, or by qualitative measures.

Evaluation Criteria—TSPAS_SP provides two types of evaluative reports: appraisal summaries and overall management summaries. Appraisal-related reports focus on the current timber sale, reflect financial considerations in dollars per unit of primary output, and display net sale value. Overall management reports focus on long-term and nontimber considerations as well as the current sale; these reports also use present value criteria such as present net value (PNV).

Modular Design—Although TSPAS_SP is intended to be a comprehensive tool for timber sale analysis, it was designed modularly and need not function in the comprehensive mode. The main modules are (1) timber outputs in existing stands, (2) timber outputs in regenerated stands, and (3) nontimber outputs. These modules can be used individually or in any combination. For example, TSPAS_SP could be used to plan, appraise, and analyze the current timber sale only, without regard to nontimber and long-term timber considerations. TSPAS_SP output reports would simply reflect that orientation and the data entered.

Procedures

TSPAS_SP is available to Forest Service users through either a DG terminal or a personal computer using CEO Connect. Regardless, the user must:

1. Access IS (Information System).
2. In IS, specify drawer and folder that can access TSPAS_SP. (The drawer and folder were specified in TSPAS installation. Consult the TSPAS installer for this information.)
3. At the IS command line, type: TSPAS_SP.

TSPAS_SP software is not “case sensitive,” therefore upper- and lower-case alphabetical characters can be mixed. However, the user may find it convenient to adopt a convention and use it consistently. In this Guide, all user-specified entries are upper-case.

TSPAS_SP first asks for the sale name. Enter the appropriate sale name. We suggest thoughtfully considering the name of a new sale, because a sale’s name cannot be changed directly. If a new sale name is entered, TSPAS_SP asks for verification, selection of a default database, and several background questions, such as location and sale year. The TSPAS_SP Main Menu then appears, providing the user with choices about entering sale information, using TSPAS_SP utilities, or obtaining output reports. TSPAS_SP uses sale-level information, sale alternative information, and information about cutting units.

TSPAS_SP information can be entered in any order, except for the following:

1. Prescriptions must be developed for a cutting unit before the unit can be appraised (existing stand or regenerated stand).
2. The prescription for a cutting unit in the existing stand must be developed before its regenerated stand prescription.
3. Regenerated stand prescriptions must be developed before nontimber outputs are entered, if default nontimber output levels are desired.
4. Existing stand prescriptions for the cutting units must be completed before incremental road cost information is entered.

A systematic approach to data entry will help inexperienced users enter information more efficiently. For example, the user could develop stand management prescriptions for all cutting units, then appraise all cutting units. Alternatively, the user could enter prescriptions for a cutting unit, appraise it, proceed to the next cutting unit, and so on. Until the user gains familiarity with TSPAS_SP data entry, we recommend following the order displayed in the menus: sale data, cutting unit data, sale alternative data, and reports. Appendix B: Data Needs Summary provides a brief listing of the types of information and data required to fully describe a timber sale.

To help keep track of data entries, TSPAS_SP provides an inventory of information entered for each cutting unit in an alternative. The inventory can be accessed at any time (see status discussion, page 6).

The data-entry process can be ended at any time, by returning to the TSPAS_SP Main Menu and selecting **6. End Session**, or by using Quick-Off (C-S-F1). Caution: the Quick-Off procedure immediately terminates TSPAS_SP without saving unsaved information; if Quick-Off is used while entering or modifying data, unsaved changes will be lost.

Reports can be generated at any time, even if some information is incomplete. TSPAS_SP detects any prescribed cutting units that have not been appraised; although displayed, TSPAS_SP excludes those units from calculations and alerts the user. If all information needed for a report is missing, TSPAS_SP will not generate the report.

The user may revise existing information any time, as desired. Simply access the appropriate data-entry screen and enter the desired information. However, some data revisions have far-reaching implications. For instance, a change in the TE appraisal model or a change in analysis year will have a substantial effect on cutting units already appraised. When these revisions occur, TSPAS_SP informs the user of possible effects and asks if the user wishes to continue. However, if the user makes any of several other changes (such as, prescriptions or nontimber outputs) where the consequence is uncertain, TSPAS_SP provides no warning. If the user makes a detectable, data-entry error or an inappropriate response, TSPAS displays an error message. Appendix C: Error Messages provides more explanation of these messages.

Rules and Conventions

TSPAS_SP follows a set of rules and conventions providing the users with needed structure, but designed to maintain simplicity and flexibility. These range from computer system requirements, to function keys and cursor movement, to methods of handling base rates and bid premiums.

Computer System Requirements

TSPAS_SP was written specifically for the Forest Service's Data General (DG) computer system. All DG computers, including the MV-4000, will operate this software. TSPAS_SP resides in Information System (IS). TSPAS_SP utilizes ORACLE (database software purchased by the Forest Service); therefore, ORACLE must be installed on the host computer. The ORACLE data table structure required by TSPAS_SP is created by the installation procedure. If TSPAS_SP is operated from a computer terminal with graphics capabilities, graphics can be used in developing nontimber output information; otherwise, nontimber outputs are entered manually. Reports produced by TSPAS_SP can be displayed on a computer monitor, or printed on a wide-carriage, dot-matrix or laser printer.

Although TSPAS_SP does not operate on a microcomputer (personal computer), a microcomputer on which DG emulation software (such as CEO Connect) has been installed can execute TSPAS_SP. To use the graphics provision of TSPAS_SP for nontimber output, the microcomputer must also be equipped with appropriate computer graphics capability. Also, a microcomputer's "Print Screen" function key can be used to provide screen-level output, not available to DG users.

Function Keys and Cursor Movement

TSPAS_SP uses many DG function keys available in CEO. Some functions are generally available, and will always operate in TSPAS_SP. Other function keys have limited availability. For example, some function keys available for use on appraisal screens are not available on prescription screens, and vice-versa. The availability of "limited availability" function keys is displayed at the bottom of the DG screen, wherever appropriate. The availability of "generally available" function keys, however, is not always displayed on TSPAS_SP screens, because of space limitations. Function keys include:

General Availability Key		Limited Availability Key	
Execute	F1	Save	F13
Status	C-F5	Index	S-F2
Insert space	F7	End field	C-F4
Delete character	F8	Previous line	F2
Delete field	F9	Next line	F5
Cancel/exit	F11	Graph input	C-F1
Quick off	S-C-F1	Previous product	F3
TSPAS Main Menu	S-C-F2	Next product	F4
		Previous harvest	F3
		Next harvest	F4

The purpose of most function keys is obvious, but there are a few important conventions used in TSPAS_SP that warrant mention. First, a data entry should be followed by pressing NEWLINE. This records the data entry, so that TSPAS_SP can "read" it. If a data entry is typed and some other function key is pressed (NEXT ENTRY or NEXT PRODUCT) without first pressing NEWLINE, the entry is lost. Second, EXECUTE "saves" (to the sale database) all entries or modifications made on a screen and returns to the previous menu. Third, CANCEL/EXIT returns to the previous menu *without* saving the entries or modifications made on the screen. Fourth, QUICK-OFF (S-C-F1) immediately terminates the TSPAS_SP session, *without* saving any unsaved information. Alternatively, the user can terminate the session by "backing-out" of the menu system to reach the Main Menu and

choose **6. End Session**. Finally, the STATUS (C-F5) function provides the user with a brief inventory of the information entered for cutting units, such as which units have been appraised. The STATUS function is always available and provides screen display only. STATUS operates as a toggle switch and must be pressed again to return to the original screen.

In addition to function keys, TSPAS_SP also provides a wide range of cursor movement:

- Space bar—moves cursor ahead one space, and deletes entry
- Right arrow—moves cursor ahead one space
- Back space—moves cursor back one space, and deletes entry
- Left arrow—moves cursor back one space
- BACKFIELD (S-F11)—moves cursor to previous field
- Down arrow—moves cursor down a column (limited availability)
- Up arrow—moves cursor up a column (limited availability)

If the user selects an undefined function key (such as HOME, PGDN, or END), TSPAS_SP will either “beep,” do nothing, or display a message that the function is not available.

Lists

From time to time TSPAS_SP asks for the name of an item from a list of permissible items. An on-line listing of these items is available through the INDEX (S-F2). The following lists are available:

- Cutting units
- Default database names
- Import files
- Nontimber outputs
- Report files
- Sale alternatives
- Sale names
- Timber products
- Timber species
- Timber strata
- Transaction evidence model names

To recall a list, position the cursor on the appropriate data-entry field (such as cutting unit name) and press INDEX. The desired name can be selected directly from the list.

Maxima

In general, TSPAS_SP minimizes size restrictions, but there are some:

Item	Maximum
Cut units/alternative	200
Management objectives	4 lines of descriptive text
Names	Specified by field width
Numerical entries	Specified by field width
Sale alternatives	20
Timber products	15
Yearly harvest rates	20

Categories and Codes

Because TSPAS_SP data-entry screens are designed to fit a standard monitor screen, short descriptions, codes, and identifying abbreviations are used extensively. These can be confusing. TSPAS_SP provides the user with

a more complete description of these categories and codes. Access the Reports Menu through the Main Menu and select **6. Default Database Lists with Descriptions**. A listing of categories and codes will be printed for the following:

- Combinations of timber strata and management intensity
- Logging cost categories
- Logging methods
- Management intensity levels
- Nontimber products
- Potential sale requirements
- Regeneration methods
- Regenerated stand default categories
- Regenerated stand default values
- Site preparation methods
- Timber products
- Timber species
- Timber strata
- Transaction evidence models
- Transaction evidence adjustor or variable names and descriptions

Users should obtain a copy of the Default Database Lists with Descriptions report and keep it handy while entering information into TSPAS_SP. Note: because codes and descriptions may differ between Default Databases and TE models, always obtain a Default Database Lists with Descriptions report whenever a new sale is initiated.

Terminology: Stands and Entries

TSPAS_SP distinguishes between cutting units on existing stands and the regenerated stands that follow. The term “existing stand” applies to the original trees through the final harvest on a cutting unit. The term “regenerated stand” applies to the new stand that follows the regeneration harvest. TSPAS_SP also uses specific terms for harvests made in the “existing stand.” The “current entry” is the initial harvest planned (identified as Entry #1), the harvest for which the timber sale is named. “Future entries” refers to any other entry (beginning with Entry #2) made in the existing stand on a cutting unit. For example, a seed-tree regeneration cut might involve the current harvest entry (Entry #1) followed by removal of the seed trees in 2 years (Entry #2), both taking place in the existing stand.

Timber Appraisals

The type of timber appraisal method available to the TSPAS_SP user depends on the type of timber product, the harvest entry being considered, and the appraisal method made available in the default database selected. Each default database is associated with an appraisal method and, possibly, specific timber products (see Databases, page 2). Table 1 shows the

Table 1—Permitted combinations of appraisal method, timber product, and harvest entry.

Table 1. Permitted combinations of appraisal method, timber product, and harvest entry.						
Appraisal method	Existing stand				Regenerated stand	
	Current entry		Future entries		All entries	
	----- Timber product -----					
	Prime	Second	Prime	Second	Prime	Second
Transaction evidence	Yes	No	Yes	N/A	Yes	N/A
Residual value	Yes	No	Yes	N/A	Yes	N/A
Secondary product	No	Yes	No	N/A	No	N/A

methods TSPAS_SP accommodates, distinguishing between primary and secondary timber products as well as current and future entries. For example, both the transaction evidence and residual value methods are permitted for use in appraising the primary product from the existing stand, regardless of entry. However, when the user initiates a new sale and chooses a default database, TSPAS_SP automatically detects the appraisal method(s) used for the primary product in the existing stand and the regenerated stand; at that point, the user cannot make those choices. Secondary products in the current entry must be appraised by a "user-entered" method. (Secondary products are not permitted for future entries in the existing stand or any entry in the regenerated stand.)

Copy, Delete, and Save

TSPAS_SP provides for speedy development of timber sale information with the Copy and Delete utilities, as well as the Save procedure. These are especially useful for initial data entry. The most desirable approach depends on circumstances. Sometimes the Copy followed by Delete is most efficient; sometimes the Save procedure will work best. The user should become familiar with both approaches.

The Copy and Delete utilities are accessed through menu choices found in the Utilities Menu. Both options apply to an entire sale, to sale alternatives, or to cutting units. For example, a sale Alternative B could be created by copying sale Alternative A into B. The user could then delete unwanted cutting units from Alternative B as appropriate. The provision to delete entire sales is intended to help clean up the TSPAS Sale Database. Copy and Delete utilities operate on one entity at a time, whether the entity is a sale, an alternative, or a cutting unit.

The Save procedure of TSPAS_SP, implemented through the SAVE (F13) function key, allows the user to repeatedly enter information onto certain data-entry screens without having to renegotiate the TSPAS_SP menu system. The Save procedure operates on the following screens:

- Road costs
- Nonharvest activities
- Harvest prescription (existing stand)
- Rate nontimber outputs
- Regenerated stand prescription
- RV or TE appraisals—all

The Save procedure has three types of applications. In each, when SAVE is selected (rather than EXECUTE), TSPAS_SP saves the information to the sale database (as EXECUTE would have done), but returns the cursor to the top of the data-entry screen. This allows users to specify the information for several alternatives (or alternative/cutting unit combinations) at one time without negotiating the menu. (Press EXECUTE to return to the Main Menu.) Following applications of SAVE, the information remains intact.

The first application of SAVE pertains to all the screens listed above, except the harvest prescription for the existing stand and appraisal screens. On the applicable screens, all previously entered information remains intact, allowing the user to edit the identifiers(s) and any other information, as desired. Using the Road Costs screen as an example, the Save procedure works as follows: (1) complete the Road Costs screen for one sale alternative; (2) press SAVE (F13) instead of EXECUTE; TSPAS_SP saves the information for this alternative and positions the cursor at the top of the screen, with all previously entered information intact; (3) edit the sale

alternative identifier and any other information as desired; (4) press SAVE again and TSPAS_SP saves the information for the new alternative and returns the cursor to the top of the screen; (5) repeat the process, as desired; (6) when completed, press EXECUTE to return to the Main Menu.

In the second application of SAVE, harvest prescriptions for existing stand, only the information for the current entry remains intact. On this screen, future entries are indicated by answering “n” (no) to the Final Harvest entry question (see exhibit 8). Future entry prescriptions are then specified by selecting NEXT HARVEST (F4) and providing information. Pressing SAVE on an existing stand prescription (one having future entries) saves all prescription information to the sale database and returns the cursor to the current entry prescription. Only current entry prescription information is available when changing to a new alternative/cutting unit combination.

The third application of Save operates on appraisal screens. When SAVE (F13) is used on any appraisal screen, the cursor goes to the top of the screen. After a new alternative/cutting unit is specified, all previously entered information disappears, allowing the user to enter new data directly. In these circumstances, the Save procedure simply bypasses menu operation; it has no other advantage over use of EXECUTE.

Years, Dollars, and Real Value Change

The TSPAS_SP user specifies two critical years: the sale year and the analysis year. The sale year is the year the sale is expected to occur; it is probably some year in the future and will not likely change. The analysis year is the year for which the sale is being analyzed; it is typically the present year and might change if the sale is analyzed over a several-year period. All user-entered costs and prices (including the current entry, future entries, and dollar-valued nontimber benefits) must be in “analysis year” dollars. For example, costs for a precommercial thinning operation occurring 5 years in the future are entered as if they were occurring in the analysis year; TSPAS_SP makes necessary calculation adjustments. Sale-year dollars are computed within TSPAS_SP, are used extensively in report calculations, but are not displayed in reports or on screens.

The TSPAS Information Manager enters both **real** rates of change for various classes of costs and prices and a general **inflation** rate into each default database within the TSPAS Default Database. Those rates are automatically identified when a default database is selected and cannot be changed by the TSPAS_SP user. TSPAS_SP adjusts all cost and price data contained in the selected default database to the analysis year (based on real and inflationary change rates) and displays those adjusted costs and prices as default values on data-entry screens. The TSPAS_SP user should inspect default values to ensure they are appropriate for analysis-year realities (except for past USFS costs, as discussed in Harvest Rates and Forest Service Costs, page 34). TSPAS_SP adjusts analysis-year dollars to sale-year dollars based on real rates of change only.

Although only one analysis year and sale year may apply to a given sale, they can be changed by the TSPAS_SP user. The sale year can be changed without negative side effects. However, caution should be exercised before changing the analysis year, because information in the sale database may already reflect the originally specified analysis year. If the analysis year is changed, the user should verify that previously entered data are consistent with the new analysis year.

All analyses involving costs and prices after the sale year are conducted in real terms only; TSPAS_SP assumes no inflationary price change after the sale year. Also, TSPAS_SP applies rates of real value change only through the end of the first rotation of the regenerated stand. After that, TSPAS_SP assumes constant real prices and costs.

Decades and the Timing of Benefits and Costs

All costs and benefits associated with the existing stand are specified for the year in which they occur. TSPAS_SP assumes the current entry occurs at year 0, the date specified as the sale year. Users indicate the timing of future harvest and nonharvest activities by specifying the year the activity will occur. TSPAS_SP permits only one timber harvest entry per year, but multiple nonharvest activities are permitted within a year. All activities are assumed to occur at the end of the year. Hence, activities occurring in year 0 are discounted 1 year, those occurring in year 1 are discounted 2 years, and so on.

Activities associated with the regenerated stand are specified for the decade in which they occur, relative to regenerated stand establishment. The regenerated stand is assumed to begin 5 years after the final entry in the existing stand. The decade in which the regenerated stand is established is treated as decade 1. For discounting purposes, regenerated stand activities are assumed to occur at the midpoint of the decade specified. Therefore, an activity occurring in decade 2 (of the regenerated stand) will be treated as occurring 15 years after the regenerated stand is established.

Nontimber outputs are also entered on a decade basis, with the sale year counted as year 1 of decade 1. Annual-average outputs for nontimber outputs are entered for the specified decade, but are discounted on an annual basis.

Present Net Values (PNV) Calculations

TSPAS_SP produces management summary reports based on present net value (PNV) calculations. The PNV for timber consists of the discounted amount of net sale value for the current entry, plus the net discounted value of all future entries in the existing stands, plus the PNV for the first rotation of the regenerated stand, plus the PNV for all other rotations for the regenerated stand in perpetuity. TSPAS_SP does not automatically include nontimber output in all subsequent timber rotations. Rather, PNV for nontimber is calculated independently of timber harvest for the time horizon specified by the user.

With and Without Analysis

TSPAS_SP bases its analyses on the difference between what is expected to happen *with* the timber sale versus what would happen *without* the sale. This should not be confused with a "before and after" analysis, which essentially assumes no change will take place without the timber harvest action (the future will be as before the harvest takes place). The with/without philosophy is especially critical for nontimber outputs, where both the "with" and "without" levels of output are specified. In TSPAS_SP, change is expected, even without the timber sale, and the "without" level of output should reflect this expectation. TSPAS_SP assumes no timber output without the sale.

Measuring Nontimber Outputs

Nontimber outputs are entered for the sale alternative as a whole, not for individual cutting units. TSPAS_SP permits use of five quantitative and qualitative (rating) scales for measuring nontimber outputs:

Quantitative scales—Numerical output levels only
—Dollar valued (includes numerical output)

Rating scales—Rank order
—Relative magnitude ranking
—Relative magnitude with direction

Information for nontimber outputs measured quantitatively is entered for each sale alternative, one alternative at a time. All dollar-valued, nontimber outputs must also be measurable in numerical output levels. For example, quantitatively measured recreation output might be measured in recreation visitor days (the actual output level) and, additionally, each unit of recreation output could be dollar valued at \$50 per recreation visit or day.

Information for rating nontimber outputs is entered for all sale alternatives simultaneously on one screen, each alternative compared to the others. When measuring nontimber output by “rank order,” a rank is assigned to each sale alternative: rank #1 for the most, #2 for the second most, and so on. Similar to rank order, the “relative magnitude ranking” option uses asterisks (*) to convey both order and relative magnitude. For example, one alternative may be rated *, another **, and two more by ****. TSPAS_SP interprets the latter two alternatives as tied for the most, about twice as much as the ** alternative, which, in turn, is twice as much as the * alternative. The “relative magnitude with direction” option uses up to three pluses (+) and up to three minuses (–) to indicate direction of change in addition to magnitude. Consider a situation where two alternatives change the nontimber output by the same amount, but one up and the other down, while a third increases the nontimber output by three times that of the other positive alternative. One correct coding scheme would be +, –, +++.

Funding Nonharvest Activities

In developing a sale alternative, TSPAS_SP users may indicate that some type of nonharvest activity will be accomplished. This activity could be intended to promote timber, as with fertilization, or nontimber output, as with stream channel restoration. Regardless, the user must indicate how the activity will be funded. A choice is provided between Knutson-Vandenberg (K-V) or Congressionally appropriated funds. If the user chooses K-V funding, TSPAS_SP attempts to finance the proposed activity using K-V funds. However, if K-V funds are not adequate, TSPAS_SP assumes the shortage will be supplemented with appropriated funds. If the aggregate of several activities cannot be funded completely from K-V funds, TSPAS_SP proportions the K-V funds among the activities. Again, the balance is assumed to be funded by Congressionally appropriated funds.

Base Rates, Bid Premiums, and Appraisals

TSPAS_SP adjusts stumpage appraisals for base rates and bid premiums, as shown in table 2. Forest Service policy states that timber sales cannot be sold for less than base rates. TSPAS_SP reflects this policy for the current entry (Entry #1) only, by adjusting the Indicated Advertised Rate appropriately. For example, if the Indicated Advertised Rate for the current entry is –\$5 per MBF and the Base Rate is \$10 per MBF, TSPAS_SP sets the Advertised Rate to \$10 per MBF. TSPAS_SP does not, however, reflect base rate policy for future entries in the existing stand or any entry in the regenerated stand; a negative Indicated Advertised Rate remains negative.

In residual value appraisal, TSPAS_SP normally increases an Advertised Rate by a predicted bid premium (an overbid) to estimate a sale’s predicted

Table 2—Appraisal adjustments for base rates and bid premiums.

Situation	Base rate	Bid premium
Existing stand		
Current entry	Yes	Yes, if AR>BR
Future entries	No	Yes
Regenerated stand		
All entries	No	Yes

High Bid. However, the adjustment for bid premium is not used in the current entry if the Advertised Rate equals the Base Rate. Hence, the Advertised Rate of \$10 per MBF discussed earlier would not be adjusted by a bid premium. TSPAS_SP adjusts all other appraisals for bid premium, regardless of the magnitude of the Advertised Rate.

Main Menu

TSPAS Sale Program is initiated by typing **TSPAS_SP** on the appropriate command line in IS. If this does not start the program, check the instructions for executing TSPAS_SP discussed earlier in this manual (see Procedures, page 4) or contact your local TSPAS Information Manager.

TSPAS_SP asks for the sale name:

Enter sale name: _

Enter the name of a sale, using up to 12 alphanumeric characters. If the sale exists, enter the sale name or select the name from a list of all existing sales by using INDEX. If this is a new sale, a new name must be provided. Select the sale name carefully, because it cannot be directly changed once entered. The sale name is used on data-entry screens, in output reports, and is the link to the TSPAS Sale Database. (Note: the sale name is also the name of the sale database.) If a sale name (and its related information) becomes unneeded or unwanted, the sale (the sale database) can be deleted from the TSPAS Sale Database (see Delete, page 47).

What happens next depends on whether a new sale or existing sale was specified. For a new sale, TSPAS_SP informs that a new sale will be created and asks for the name of a default database:

Enter default database name: _

(INDEX can be useful here.) Selection of a specific default database determines the default values encountered on data-entry screens, as well as the appraisal method available for the existing and regenerated stands. Although any default database can be specified, the most recently established database would typically be selected. The user then completes the sale description screen (shown later in exhibit 3), which collects basic sale information. Once the sale description screen is complete, TSPAS_SP proceeds to the Main Menu.

When an existing sale is specified, TSPAS_SP displays the Main Menu (exhibit 1). Data are entered into the sale database at three different levels, corresponding to the first three items in the Main Menu. The **1. Sale Data** choice leads to a sub-menu for entering data that pertain to all alternative sale designs within a given sale. Information describing the overall sale is entered with this choice. The **2. Cutting Unit Data** choice leads to a sub-menu for entering information specific to individual cutting units within a sale alternative. Management prescription and appraisal information are

Exhibit 1

MAIN MENU

1. Sale Data (sale description, output selections)
 2. Cutting Unit Data (prescriptions, appraisals)
 3. Sale Alternative Data (nontimber outputs, nonharvest activity, road costs)
 4. Reports (appraisal summaries, management summaries)
 5. Utilities (copy, delete, switch, access files, import)
 6. End Session
-

Enter choice: 1

entered with this choice. The **3. Sale Alternative Data** choice leads to a sub-menu for entering data specific to a sale alternative (as with road costs) or a comparison of alternatives (as with rating nontimber outputs). The **4. Reports** choice leads to the sub-menu for generating any of several reports. The **5. Utilities** choice leads to a sub-menu that provides for several TSPAS_SP utilities, including copying and deleting sales, alternatives, and cutting units. Finally, **6. End Session** is used to exit the program. Quick-Off (S-C-F1) can also be used to exit TSPAS_SP at any time. However, use Quick-Off with caution, because unsaved data modifications displayed on the screen are not saved when Quick-Off is selected.

Sale Data Menu

The Sale Data Menu, shown in exhibit 2, collects information applying to all alternatives developed for a specific timber sale (such as the sale name shown on the Sale Description screen).

Sale Description

The Sale Description screen (exhibit 3), the first choice in the Sale Data Menu, collects basic information about the sale itself. The first several lines of descriptive information appear on some reports, but are not used analytically. **Location** records additional information about the location of the sale area. **Forest Plan Information** documents forest plan direction for the proposed sale. The remaining information is used in TSPAS_SP analyses.

The next blocks of information identify the appraisal method used to appraise the primary timber in the existing stand and regenerated stand. These fields cannot be edited, because the appraisal method was simultaneously determined when the default database was selected. If transaction evidence appraisal is specified for the existing stand, a window appears and the user is asked to choose a TE model name to be used in appraisal. (INDEX can be useful here.)

During the course of planning and designing a timber sale, new TE models may become available and the user may wish to change to a different TE

Exhibit 2

SALE DATA

1. Sale Description
 2. Select & Describe Nontimber Outputs
 3. Select & Describe Timber Products
 4. Return to Main Menu
-

Enter choice: 1

Exhibit 3

SALE DESCRIPTION

Region: LAKE STATES Forest: ST JOE Ranger Dist: BRUSH CREEK
Sale Name: big bear Location: DONNER AREA

Forest Plan Information

Management Area: STANDARD TIMBER PRODUCTION
Objectives & Constraints: PRODUCE TIMBER AND WILDLIFE OUTPUTS, USING ECOSYSTEM MANAGEMENT PRINCIPLES, PAYING PARTICULAR ATTENTION TO WATER YIELD, HABITAT FRAGMENTATION, AND BIOLOGICAL DIVERSITY.

Appraisal method for existing stand: Transaction Evidence
Appraisal method for regenerated stand: Transaction Evidence

Primary timber product: SAWTIMBER

Analysis year: 1995 Sale year: 1997

F1=execute

F11=cancel/exit

S-F11=back field

S-F2=index

model. TSPAS_SP permits this change. However, if a new model is selected, TSPAS_SP warns that *all* cutting units already appraised may need to be reappraised; the user must provide a positive response before selection of a new TE model is actually implemented. Reappraisal is required because the new TE model can differ from the original, both in terms of adjustors (variables) and adjustments (coefficients). Reappraisal may be simple or time consuming.

Primary timber product specifies the main or dominant timber product produced in the sale. If transaction evidence appraisal was chosen for the existing stand, TSPAS_SP automatically completes this field, based on the TE model previously specified. In this case, the primary timber product cannot be changed. If residual value appraisal was chosen for the existing stand, the user identifies the primary timber product. Timber products are limited to those specified by the TSPAS Information Manager in the default database selected. (INDEX can be useful here.) All stumpage appraisals will treat the primary timber product identified as the first product appraised. In addition, all future entries for the existing stand will be appraised in terms of this primary product. The timber product appraised for the regenerated stand depends entirely on what is specified by the TSPAS Information Manager.

Analysis year is the year (4 digits) to which all TSPAS_SP data-entry screens, analyses, and reports relate. All costs and prices entered in TSPAS_SP should be expressed in analysis-year dollars. Default costs and prices obtained from the default database are automatically adjusted and displayed in analysis-year dollars. Care must be taken when the sale year, analysis year, and the current year are not the same. Cost and price data recorded apply to the analysis year, not the sale year or the current year (except for Forest Service costs incurred before the sale year, as discussed in Harvest Rates and Forest Service Costs, page 34).

Sale year is the year (4 digits) the planned sale is likely to be sold. The sale year is used extensively by TSPAS_SP for internal calculations. But no data-entry screens or reports portray sale year information, other than the sale year itself. Re-specify the sale year, at will.

Select and Describe Nontimber Outputs

Exhibit 4 shows the screen accessed by the second option in the Sale Data Menu. This screen selects and describes nontimber outputs, either quantified or rated, resulting from the timber sale. Information about production

Exhibit 4

SELECT & DESCRIBE NONTIMBER OUTPUTS

Nontimber Output -----	Rated or Quantified -----	Valued -----	Unit of Measure -----	Value /Unit -----
				.00
				.00
				.00
				.00
				.00
				.00
				.00
				.00
				.00
				.00
				.00
				.00
				.00
				.00

F1=execute

F11=cancel/exit

S-F2=index

S-F11=back field

levels for each output listed will be entered later, by sale alternative (see Sale Alternative Data Menu, page 27).

When this screen is first accessed for a new timber sale, the fields will be blank. Enter the name of a nontimber output in the **Nontimber Output** field. (INDEX can be useful here.) If the output name is selected from the list or it exactly matches a name in the associated default database, the remainder of the information will fill with default values. If the nontimber output is not in the associated default database, the data-entry window shown in exhibit 5 appears. Questions in the window correspond to information in the columns behind the window. TSPAS_SP provides the option of *quantifying* a nontimber output for each alternative or *rating* the sale alternatives for a specific nontimber output (see Measuring Nontimber Outputs, page 11). Quantifying involves specifying the numerical amount or quantity for the nontimber output. Rating nontimber outputs is done by comparing sale alternatives (from most to least) on the basis of the amount of nontimber output produced. The choice of quantifying or rating is made by entering either "q" (quantified) or "r" (rated). If the output is quantified, the next question is whether the output is to receive an economic value or price. Respond as appropriate. For both a quantified or a rated output, enter the output's unit of measure, which may be any character description up to seven characters, such as AUM for grazing outputs. This entry is followed by the value per unit, only if an output is to be valued. TSPAS_SP assigns a constant value per unit of output for the entire level of output. Note: information entered for nontimber outputs is restricted to rating or quantifying; that is, a nontimber output designated for rating cannot be quantified and vice-versa. Finally, answer whether TSPAS_SP should continue. A "y" (yes) response returns the user to the main nontimber output screen with new information listed; a "n" (no) response repositions the cursor at the last question answered.

Exhibit 5

SELECT & DESCRIBE NONTIMBER OUTPUTS

Nontimber Ou+	Rated or	Unit of	Value +Unit
----	-----	-----	-----
	Input Data for DIVERSITY		
DIVE			.00
	Is DIVERSITY to be quantified or rated? (q/r):		.00
			.00
	Is DIVERSITY to be valued? (y/n):		.00
			.00
	Unit of measure:		.00
			.00
	Value per unit: .00		.00
			.00
			.00
+-----	-----	-----	+ .00
			.00
			.00
			.00
			.00

F1=execute

F11=cancel/exit

S-F2=index

S-F11=back field

Select and Describe
Timber Products

The screen accessed by the third item in the Sale Data Menu is shown in exhibit 6. This screen records information about all timber products, both primary and secondary, produced by any sale alternative.

Only the primary timber product (as identified on the **Sale Description** screen) is listed when this screen is first accessed for a new timber sale. Additional timber products can be entered by either using INDEX and selecting a product from the specified default database, or by typing up to a 10-character timber product. If the timber product is defined in the default database specified, the up-to-five-character unit of measure (MBF, CORDS) and ratio to cubic feet (the cubic foot of solid wood per unit of the product) will be retrieved. These values can be edited if necessary. If a timber product is not defined in the default database, the units of measure and cubic feet ratio must be supplied by the user. Timber products selected and described on this screen are important, because appraisals are restricted to those products.

Cutting Unit
Data Menu

The menu for entering and editing cutting unit data is presented in exhibit 7. This menu is accessed by selecting **2. Cutting Unit Data** in the Main Menu. The five options available in this menu behave the same: after the menu choice is made, the appropriate screen appears; the cursor will be located in the **Sale Alternative** field and next in the **Cutting Unit** field; make choices as appropriate, and complete data-entry screens as described below.

Harvest
Prescriptions
(Existing Stand)

The first item in the Cutting Unit Data Menu builds prescriptions for harvesting the existing stand (exhibit 8). These prescriptions include the sale being planned, plus each future entry through the final harvest for the existing stand. A separate screen is completed for each harvest entry, for each cutting unit. The prescription for a cutting unit must be completed

Exhibit 6

SELECT & DESCRIBE TIMBER PRODUCTS

Timber Product	Unit of Measure	Cubic Feet per Unit
-----	-----	-----
SAWTIMBER	MBF	167.00
PULPWOOD	CORDS	70.00
		.00
		.00
		.00
		.00
		.00
		.00
		.00
		.00
		.00
		.00
		.00
		.00
		.00

Exhibit 7

CUTTING UNIT DATA

1. Harvest Prescriptions (Existing Stand)
 2. Current Entry Appraisal (Existing Stand)
 3. Future Entry Appraisal (Existing Stand)
 4. Regenerated Stand Prescription
 5. Regenerated Stand Appraisal
 6. Return to Main Menu
-

Enter choice: 1

Exhibit 8

HARVEST PRESCRIPTIONS (EXISTING STAND)

Sale Alternative: DIVER

Entry # 1

Sale Year: 1997

Cutting Unit: 1

Unit Size: 20 acres

Rx Description: BIO DIVERSITY

Years from 1997 for this harvest: 0

Final harvest entry? (y/n): n

1. Site Preparation: G

- | | | | | |
|---------------|-------------|--------------|-------------|--------------|
| a) SCARIFY | b) BURN | c) SCAR/BURN | d) CHEMICAL | e) HAND PILE |
| f) TRCTR PILE | g) LOP/SCTR | h) NONE | | |

2. Regeneration Method: C

- | | | | | |
|---------------|---------------|------------|---------------|------------|
| a) MACH PLANT | b) HAND PLANT | c) NATURAL | d) INTERPLANT | e) SEEDING |
| f) NONE | | | | |

3. Sale Requirements: (Type an 'x' by those that apply)

SKID TR SEED	X WILDL TREES	HAUL RESTRIC	X WILDL COVER	X SLASH REMOVE
CROSS DITCH	ROAD CLOSURE	DIR FELLING	WHOLE TREE	SNOW REMOVAL
CORR WIDTH	CORR SPACE	X CLEAN DITCH	FLUSH CUT	FIRE LINES
X SLASH TOPS	DOZER PILE	X HAND PILE	KELLY HUMPS	WILDL CONTR

F1=execute	F3=prev harvest	F4=next harvest	F11=cancel/exit	F13=save
------------	-----------------	-----------------	-----------------	----------

before the unit can be appraised. Most data-entry requirements are self explanatory, but several supplementary points should be noted.

Years from ** for this harvest** identifies timing for the prescription on the screen, where **** refers to the sale year, as specified in the Sale Description screen. Enter “0” if the prescription applies to the sale being planned. For future entries, count years after the current entry. Enter progressively larger year values for each future entry. Only one entry is permitted for each year.

Final harvest entry? is very important, and collects information on whether or not this harvest entry is the final entry. If the user intends multiple-entry management (shelterwood or uneven-age management), the response is “n” (no). For a given cutting unit, continue to answer “n” until the final harvest (shelterwood or seed tree) or the cutting cycle (uneven-age management) has been reached. At that point, answer “y” (yes), the same answer that would normally be used for single, clearcut harvest entry.

The remainder of the screen records the prescription for a harvest entry. Respond as appropriate. For a more detailed listing of prescription categories, see Categories and Codes, page 7. Choices in **Site Preparation** and **Regeneration Method** affect costs used in stumpage appraisals. For **Sale Requirements**, mark the applicable requirements with an “x.” Requirements selected appear on various screens for information only; they are not included in calculations.

When this screen has been completed for the current harvest entry, press NEXT HARVEST (F4) to provide prescription information for the next entry in the existing stand for that cutting unit. Enter the year of the harvest, but in this and all future entries, each entry year must be unique. Additional prescription screens are provided until the question **Final harvest entry?** is answered “y.” When screens are completed for all harvest entries planned for the present cutting unit, press EXECUTE to return to the Cutting Unit Data Menu. (The Save procedure can be useful here.)

Current Entry Appraisal (Existing Stand)

Select this second item in the Cutting Unit Data Menu to appraise timber harvests for the sale being planned, but only after developing the management prescription for the cutting unit being appraised. The appraisal method available for the primary timber product is the one specified for the entire sale being planned (see Sale Description, page 14): transaction evidence and residual value. Secondary timber products must be appraised with the Secondary Product Appraisal screen (see NEXT PRODUCT (F4) discussion, page 22). In the following appraisal discussions, consult only the appropriate section, transactions evidence or residual value.

Transaction Evidence—The screen for transaction evidence appraisal is presented in exhibit 9. After the appropriate **Sale Alternative** and **Cutting Unit** are specified, several reminders appear at the top of the screen: **Entry #**, primary timber **Product**, cutting **Unit size**, **Year** of entry, and **Analysis Year**. On the left side of the screen are **Sale Characteristics** and **Sale Requirements**; both reflect information entered on the Cutting Unit Prescription screen. These characteristics and requirements are displayed as “memory joggers” for appraising timber and cannot be edited.

To appraise a cutting unit, describe timber harvested from the cutting unit by entering up to 20 pairs of species and associated harvest volumes, until the total cutting unit volume has been specified. Species used are limited to those defined in the specified default database. (INDEX can be useful here.) Additionally, up to three columns of species-specific information may be required, depending on the TE model used; default values can be

Exhibit 9

CURRENT	ENTRY APPRAISAL (EXISTING STAND)		ENTRY # 1
Sale Alternative: DIVER	Product: SAWTIMBER	Unit size: 20	Year: 1997
Cutting Unit: 1			Analysis Year: 1995
Sale Characteristics	Species	Volume	SPLT
	--MBF--	---	\$/MBF---
	1 DF	60.0	333.00
	2 LPP	20.0	333.00
Site Prep'n : LOP/SCTR	3	.0	.00
Regen Method: NATURAL	4	.0	.00
	5	.0	.00
Sale Requirements			
	Planned # Cutting Units in Sale: 5		
WILDL TREES	%DEAD_LPP (cu):	10.00 %	(3 items remain)
WILDL COVER	+-----+		
SLASH REMOVE	GROSS STUMPAGE VALUE	261.33	
CLEAN DITCH	+-----+		
SLASH TOPS	ENVIRON PROTECT:	30.97	(2 costs remain)
HAND PILE	+-----+		
	Essent Regen:	45.00	Base Rate: 49.75
	+-----+		
	Ind Adv Rate:	154.75	Advertised Rate: 154.75
		"High Bid":	184.75
F1=execute F11=cancel/exit F4=next product F13=save C-F4=end field			

edited as appropriate. Species-specific fields "scroll" to provide for additional species; continue entering information as before.

Pressing NEWLINE on a blank species field moves the cursor to the **Planned # of Cutting Units in Sale** alternative. This planned number is used for calculations displayed on the screen only and does not affect the data written to or calculations in the output reports. The planned number of cutting units applies to all cutting units defined in the sale alternative. The number entered remains in effect until changed, both for units to be appraised and for units already appraised. A change in the planned number of cutting units specified for one unit will change that number for all units, because TSPAS_SP assumes all cutting units will be packaged as one sale.

The next several fields collect the main block of data needed by the transactions evidence model. The first field collects information on specific (adjustors or variables) contained in the TE model being used. Note: a counter shows the number of items (adjustors or variables) remaining in the scrolling field. Provide the information requested and press NEWLINE to move through the list. When the last data request is supplied and NEWLINE pressed, the cursor moves to the next field. (END FIELD (C-F4) moves the cursor without going through the "items" list.) Before moving to the next field, TSPAS_SP calculates the value associated with the transactions evidence model being used and displays it in the box. This value may be predicted high bid or some other quantity (such as gross stumpage value), depending on the TE model used. When a cutting unit is appraised the first time, this value is not calculated until all information (for adjustors or variables) has been provided; subsequently, the value is constantly updated as

information is modified. Before moving to the next field, TSPAS_SP displays or calculates appraisal information at the bottom of the screen, based on user-entered information and information from the associated default database.

The next field collects data for cost adjustments needed to convert the transaction evidence model's appraised value to a prediction of high bid, if they are different. Adjustments are TE model-specific, developed by the TSPAS Information Manager and entered into the associated default database. Review the values and edit or accept the information as appropriate. Whenever values are edited, TSPAS_SP automatically updates the **Indicated Advertised Rate**, the **Advertised Rate**, and "**High Bid**" displayed at the bottom of the screen. When the last data entry is made, the cursor moves to the next field. END FIELD (C-F4) is available for moving to the next field without going through the list.

The final data field (**Essential Regeneration costs**) completes appraisal characteristics. The essential regeneration default value is based on site preparation and regeneration categories chosen on the Harvest Prescriptions screen and the harvest volume specified for the cutting unit. Essential regeneration remains at zero until the cursor reaches the field, when TSPAS_SP calculates and displays the default value. Subsequent changes in harvest volume will not affect the essential regeneration value displayed. Accept or edit the default information as appropriate. Other information, such as **Base Rate** and **Advertised Rate**, is computed from the information supplied on the screen and contained in the associated default database; it cannot be separately edited. Press EXECUTE to return to the Cutting Unit Data Menu. (The Save procedure can be useful here.)

All secondary timber products must be appraised with the Secondary Product Appraisal screen (exhibit 10), accessed by pressing NEXT PRODUCT (F4) on the Current Entry Appraisal screen. The information presented on the top of the screen and on the left-hand side is the same as on the Current Entry Appraisal screen. Secondary products are ordered alphabetically. Data entry begins with the **Amount removed**. Depending on the product, amount is measured in cords, pieces, and so on. Other data-entry categories conform to standard definitions used in stumpage appraisal. PREVIOUS PRODUCT (F3) is used to return to the preceding product. NEXT PRODUCT (F4) is used to appraise other secondary products, as appropriate. Press EXECUTE to save all appraisal information for the cutting unit and return to the Cutting Unit Data Menu. (The Save procedure can be useful here.)

Residual Value—The screen for residual value appraisal is presented in exhibit 11. After the appropriate **Sale Alternative** and **Cutting Unit** are specified, several reminders appear at the top of the screen: **Entry #**, primary timber **Product**, cutting **Unit size**, **Year** of entry, **Units of measure**, and **Analysis Year**. On the left side of the screen are **Sale Characteristics** and **Sale Requirements**. Both reflect information entered on the Cutting Unit Prescription screen. These characteristics and requirements are included on this screen as "memory joggers" for appraising timber and cannot be edited.

Residual value appraisal data are entered on the lower-right side of the screen. First enter a timber species (as defined in the default database)

Exhibit 10

SECONDARY PRODUCT APPRAISAL - ENTRY # 1

Sale Alternative: DIVER	Product: PULPWOOD	Unit size: 20	Year: 1997
Cutting Unit: 1	Units of measure: CORDS	Analysis Year: 1995	

Sale Characteristics

Site Prep'n : LOP/SCTR
Regen Method: NATURAL

Sale Requirements

WILDL TREES
WILDL COVER
SLASH REMOVE
CLEAN DITCH
SLASH TOPS
HAND PILE

Amount removed:

Minimum bid rate: 16.77
Essential regen.: .00
Ind Adv rate: .00

Base rate: 16.77
Adv rate: 16.77

"High Bid": .00

F1=execute F11=cancel/exit F3=prev product F4=next product

Exhibit 11

CURRENT ENTRY APPRAISAL (EXISTING STAND) ENTRY # 1

Sale Alternative: SEC	Product: SAWTIMBER	Unit size: 100	Year: 2000
Cutting Unit: 1	Units of measure: MBF	Analysis Year: 1995	

Sale Characteristics

Log'ng Methd: TRACTOR
Site Prep'n : SCARIFY
Regen Method: INTERPLANT

Species	Volume	Price	Recvry	Mfg Cost	Log Val
DF	200.0	254.59	1.50	95.08	286.80
PP	200.0	424.32	1.20	103.88	405.30

Sale Requirements

Mill-delivered value	346.05
Felling & bucking costs	22.84
Skidding & loading costs	42.29
Haul costs (w/o maintenance)	31.51
Environmental protection costs	2.48
Temp development (w/o roads)	1.05

+-----	
Profit & Risk: 11.00%	Ind Adv Rate: 201.73
Essent Regen: 43.54	Base Rate: 51.54
Bid Premium: 32.95	Advertised Rate: 201.73
	"High Bid": 234.68

F1=execute F11=cancel/exit F3=prev product F4=next product F13=save

under **Species**. (INDEX can be useful here.) Up to five species may be specified for each cutting unit. TSPAS_SP displays the default data for the remaining items in that row. These values are defaults, intended to be edited. Edit these values as necessary. Next, specify the **Volume** of timber harvested for each species. As new species and harvest volumes are entered, the overall **Mill-delivered value** is calculated and updated.

After all timber species information has been entered, cost-related information must be provided. The cursor moves to **Felling & bucking costs** when NEWLINE is pressed on a blank field under **Species**, or from the last line under **Mfg Cost**. TSPAS_SP displays default values for the preliminary cost information. Each field can be edited as appropriate. Cost information must be entered on a per-unit basis (for example, \$ per MBF). Although the categories used on this screen generally conform to the standard definitions used in residual value appraisal, there are two minor exceptions to note. First, road maintenance costs should *not* be included in **Haul costs**. Second, the cost for temporary roads should *not* be included in **Temporary development costs**. Instead, road maintenance costs and the cost for temporary roads are entered for the sale alternative as a whole (see Road Costs, page 33).

The final block accumulates non-logging cost information. First, enter the applicable percentage for **Profit & Risk**. The default for **Essential Regeneration** cost is based on the site preparation and regeneration categories chosen on the Harvest Prescription screen and the harvest volume specified for the cutting unit. Essential regeneration remains at zero until the cursor reaches the field; then TSPAS_SP calculates and displays the default. Any subsequent changes in volume will not affect the essential regeneration cost default. Stumpage value information displayed on the lower-right portion of the screen is calculated from information provided and cannot be edited. Selecting EXECUTE saves information and returns to the Cutting Unit Data Menu. (The Save procedure can be useful here.)

All secondary timber products must be appraised with the Secondary Product Appraisal screen (see exhibit 10), accessed by NEXT PRODUCT (F4) on the Current Entry Appraisal screen. Information at the top of the screen is generally the same as on the earlier Current Entry Appraisal screen. Secondary products are ordered alphabetically. Data entry begins with **Amount Removed**. Other data-entry categories conform to standard definitions used in stumpage appraisal. PREVIOUS PRODUCT (F3) is used to return to the preceding product. NEXT PRODUCT (F4) is used to appraise other secondary products, as appropriate. Press EXECUTE to save all appraisal information for the cutting unit and returns to the Cutting Unit Data Menu. (The Save procedure can be useful here.)

Future Entry Appraisal (Existing Stand)

The third item in the Cutting Unit Data Menu accesses the screens for appraising future entries for the existing stand on a cutting unit. Each future harvest entry in the existing stand must be appraised. All costs and prices are entered in analysis-year dollars. Appraising future entries in the existing stand is the same as appraising the first entry, except that only the primary timber product can be appraised; secondary products are not permitted. In the following discussions about appraisal, consult only the appropriate section, transactions evidence or residual value.

Transaction Evidence—This screen is identical to the transaction evidence screen for the current harvest entry (see exhibit 9), except for two

additional fields: **Specified Roads** and **USFS Costs**. Enter the appropriate cost for specified roads, if the harvest entry on the cutting unit involves any road construction or reconstruction costs. Because the meaning of **USFS Costs** is not specified by TSPAS_SP, consult with the local TSPAS Information Manager for interpretation. The **Planned # Cutting Units in Sale** field performs differently from that of the current entry, because TSPAS_SP does not assume all cutting units having future entries will be packaged into one sale. Therefore, the planned number of sale cutting units specified for a given cutting unit applies to that unit only.

Additional entry appraisals for the cutting unit are accessed by selecting **NEXT HARVEST** (F4). Once at the next harvest entry, **PREVIOUS HARVEST** (F3) returns the user to the previous entry. Selecting **EXECUTE** saves all appraisal information for the cutting unit and returns to the Cutting Unit Data Menu. (The Save procedure can be useful here.)

Residual Value—This screen is similar to the residual value screen for appraising the current harvest entry (see exhibit 11). There are slight differences in the **Haul costs** and **Temporary development costs** fields and the addition of the **Specified road costs** and **USFS costs** fields. **Haul costs** includes road maintenance costs; **Temporary development costs** includes the cost for temporary roads. Enter the appropriate cost for **Specified road costs**, if the entry would involve any road construction or reconstruction. These costs are recorded on a per-unit basis. The user may wish to use a broad sale-wide average cost per unit to ensure that the sum of all cutting units will accumulate to the correct sale total. Enter an appropriate value for **USFS Costs**. Because the meaning of USFS costs is not specified by TSPAS_SP, consult with the local TSPAS Information Manager for interpretation.

Additional entry appraisals for that cutting unit are accessed by selecting **NEXT HARVEST** (F4). Once at the next harvest entry, **PREVIOUS HARVEST** (F3) returns the user to the previous entry. Selecting **EXECUTE** saves all appraisal information for future entries for the cutting unit and returns to the Cutting Unit Data Menu. (The Save procedure can be useful here.)

Regenerated Stand Prescription

The fourth item in the Cutting Unit Data Menu collects prescription information related to the regenerated stand, the stand following the final harvest in the existing stand. All information necessary for managing and harvesting the regenerated stand is entered for a cutting unit on this screen. Prescriptions and other management activities available for regenerated stand management are limited to those contained in the default database used with the sale. The prescription is specified when the user chooses **Timber Strata** and **Management Intensity** (exhibit 12.) (For a listing of prescription categories, see Default Database Lists with Descriptions, page 29.) With prescription specified, TSPAS_SP retrieves the set of associated management activities and yields. Modify the cost of those management activities, if appropriate, at **Regenerated Stand Management Costs**. The type of cost activity and its timing cannot be modified.

Appraisal information resulting from these choices can be viewed and edited for the cutting unit by selecting **5. Regenerated Stand Appraisal** in the Cutting Unit Data Menu.

Regenerated Stand Appraisal

This fifth item in the Cutting Unit Data Menu edits appraisal information for all harvest entries in the regenerated stand, the stand following

Exhibit 12

REGENERATED STAND PRESCRIPTION

Sale Alternative: DIVER

Sale Year: 1997

Cutting Unit: 1 Unit Size: 20 acres

Analysis Year: 1995

1. Timber Strata: FOR TYPE:DF PROD CLASS:MED

2. Management Intensity: L

3. Regenerated Stand Management Costs:

Cost Type	Stand Age -Decades-	Amount - \$/Ac -
NO COSTS	0	.00

F1=execute F11=cancel/exit F13=save S-F2=index S-F11=back field

the final harvest in the existing stand. Note: a management prescription for a cutting unit in the regenerated stand must be completed before regenerated stand appraisal can be applied to that cutting unit. Note: only the primary timber product can be appraised. Transaction evidence and residual value appraisal options are available.

Transaction Evidence—Appraisal information for the regenerated stand is much more automated than appraisal information for the existing stand. The default database selected contains all the components needed for preliminary appraisal of harvest entries for the regenerated stand. Use this menu item to inspect or edit the default appraisal values.

This screen is identical to the transaction evidence screen for the current harvest entry (see exhibit 9), except for three fields: **Decade** of harvest, **Specified Roads**, and **USFS Costs**. Decade of harvest is linked to harvest timing in the regenerated stand prescription selected and cannot be modified. Enter the appropriate cost for **Specified Roads**, if the harvest entry on the cutting unit involves any road construction or reconstruction costs. Because the meaning of **USFS Costs** is not specified by TSPAS_SP, consult with the local TSPAS Information Manager for interpretation. The **Planned # Cutting Units in Sale** field performs differently from that of the current entry, because TSPAS_SP does not assume all cutting units having regenerated stand entries will be packaged into one sale. Therefore, the planned number of sale cutting units specified for a given cutting unit applies to that unit only.

Additional entry appraisals for that cutting unit are accessed by selecting NEXT HARVEST (F4). Once at the next entry, PREVIOUS HARVEST (F3) returns the user to the previous entry. Select EXECUTE to save all appraisal

information for the cutting unit and return to the Cutting Unit Data Menu. (The Save procedure can be useful here.)

Residual Value—Appraisal information for the regenerated stand is much more automated than appraisal information for the existing stand. The default database selected contains all the components needed for preliminary appraisal of harvest entries for the regenerated stand. Use this menu item to inspect or edit the default appraisal values.

The residual value appraisal screen for the regenerated stand is similar to the screen for appraising the current harvest entry (see exhibit 11). The harvest-year field is replaced by the **Decade** of harvest, which is linked to harvest timings in the regenerated stand prescription and cannot be modified. There are also slight differences in the **Haul costs** and **Temporary development costs** fields, and **Specified road costs** and **USFS costs** fields have been added. **Haul costs** includes road maintenance costs; **Temporary development costs** includes the cost for temporary roads. Enter the appropriate cost for **Specified road costs**, if the entry would involve any road construction or reconstruction. These costs are recorded on a per-unit basis. The user may wish to use a broad sale-wide average cost per unit to ensure that the sum of all cutting units will accumulate to the correct sale total. Enter an appropriate value for **USFS Costs**. Because the meaning of USFS costs is not specified by TSPAS_SP, consult with the local TSPAS Information Manager for interpretation.

Additional entry appraisals for that cutting unit are accessed by selecting NEXT HARVEST (F4). Once at the next harvest entry, PREVIOUS HARVEST (F3) returns the user to the previous entry. Selecting EXECUTE saves all appraisal information for the cutting unit and returns to the Cutting Unit Data Menu. (The Save procedure can be useful here.)

Sale Alternative Data Menu

Some TSPAS_SP data are entered on a sale-alternative basis. These data apply to sale alternatives (individually or collectively), but are either inappropriate or inconvenient to enter for each cutting unit separately. The Sale Alternative Data Menu (exhibit 13) is accessed by selecting **3. Sale Alternative Data** in the Main Menu. For choice **2. Rate Nontimber Outputs**, the user provides comparison information for all sale alternatives at once, on one data-entry screen. For other choices, the user specifies information for one sale alternative at a time, on separate data-entry screens.

Quantify Nontimber Outputs

This first choice, **Quantify Nontimber Outputs**, records physical quantities for “quantified” nontimber outputs (exhibit 14). First, identify the **Sale Alternative** and the **Nontimber Output** being quantified. The nontimber output specified must be one of the “quantified” nontimber outputs defined on the Nontimber Outputs screen (see exhibit 4). (INDEX can be useful here.) Although TSPAS_SP permits any combination of nontimber outputs and sale alternatives to be quantified, any nontimber output quantified for one alternative should be quantified for all sale alternatives.

The main data-entry portion of the screen lies below the alternative and output names. The far left side of the screen displays the **Units of measure** and the **Value \$ per unit** (if appropriate) for the output being quantified. The value per unit was specified earlier on the Nontimber Outputs screen, in the Sale Data Menu (see exhibit 4), and cannot be changed on this screen.

Exhibit 13

SALE ALTERNATIVE DATA

1. Quantify Nontimber Outputs
 2. Rate Nontimber Outputs
 3. Nonharvest Activities
 4. Road Costs
 5. Harvest Rates and Forest Service Costs
 6. Return to Main Menu
-

Enter choice: 1

Exhibit 14

QUANTIFY NONTIMBER OUTPUTS

Sale Alternative: DIVER

Sale Year: 1997

Nontimber Output: ELK COVER

+-----+			
Output for Area of Influence			
	Decade	w/ DIVER	w/o
	1	80.00	100.00
Units	2	87.28	100.00
of	3	119.13	100.00
Measure	4	126.58	100.00
-----	5	119.99	100.00
EQUIVAC	6	120.00	100.00
	7	.00	.00
	8	.00	.00
Value	9	.00	.00
\$ per	10	.00	.00
Unit	11	.00	.00
-----	12	.00	.00
5.00	13	.00	.00
	14	.00	.00
	15	.00	.00
+-----+			
F1=execute	F11=cancel/exit	F13=save	S-F2=index C-F1=graph input

Enter output quantities in the box. Note: the heading in the box indicates that the nontimber outputs are to be specified for the geographical **Area of Influence**. The user is responsible for identifying the appropriate area of influence. It probably varies with the nontimber output being assessed. For example, with forage production, the sale area might represent the appropriate area of influence. For water output, it might be a drainage or landscape. For grizzly bear habitat, it might be an ecoregion.

Output quantities are entered for both the sale alternative (under heading w/[alternative name]) and the no action alternative (under heading w/o). TSPAS_SP computes the w/o to w/ changes and attributes the difference to the sale alternative. Output quantities must be expressed as *annual average* output per decade, even though output may actually vary on an annual basis. Decade 1 refers to the first decade after the sale year.

Nontimber output quantities can be entered in either of two ways. First, they can be typed directly into the two data columns in the box. (The cursor can be moved from column to column using NEWLINE and BACK FIELD, or it can move up and down the columns using PREVIOUS LINE (F2), NEXT LINE (F5), or UP and DOWN ARROW. Note, however, that a data entry must be followed by a NEWLINE for TSPAS_SP to "read" the data provided.)

Second, if TSPAS_SP is operating on a graphical terminal, nontimber outputs for either w/[alternative name] or w/o can be entered using a graphical approach. (Non-graphical terminals do not have the GRAPH INPUT function listed at the bottom of the screen and are restricted to entering data directly, as described above.) With the cursor positioned anywhere on the desired data-entry column, select GRAPH INPUT (C-F1) and six general curve forms are drawn on the right side of the screen (exhibit 15). Select the general curve form that best approximates the expected output pattern over time. (Note: the horizontal curve form should be selected if an up or down stair-step pattern is desired.) The six curves are then replaced with more specific shapes of the general curve form chosen. Exhibit 16 illustrates

Exhibit 15

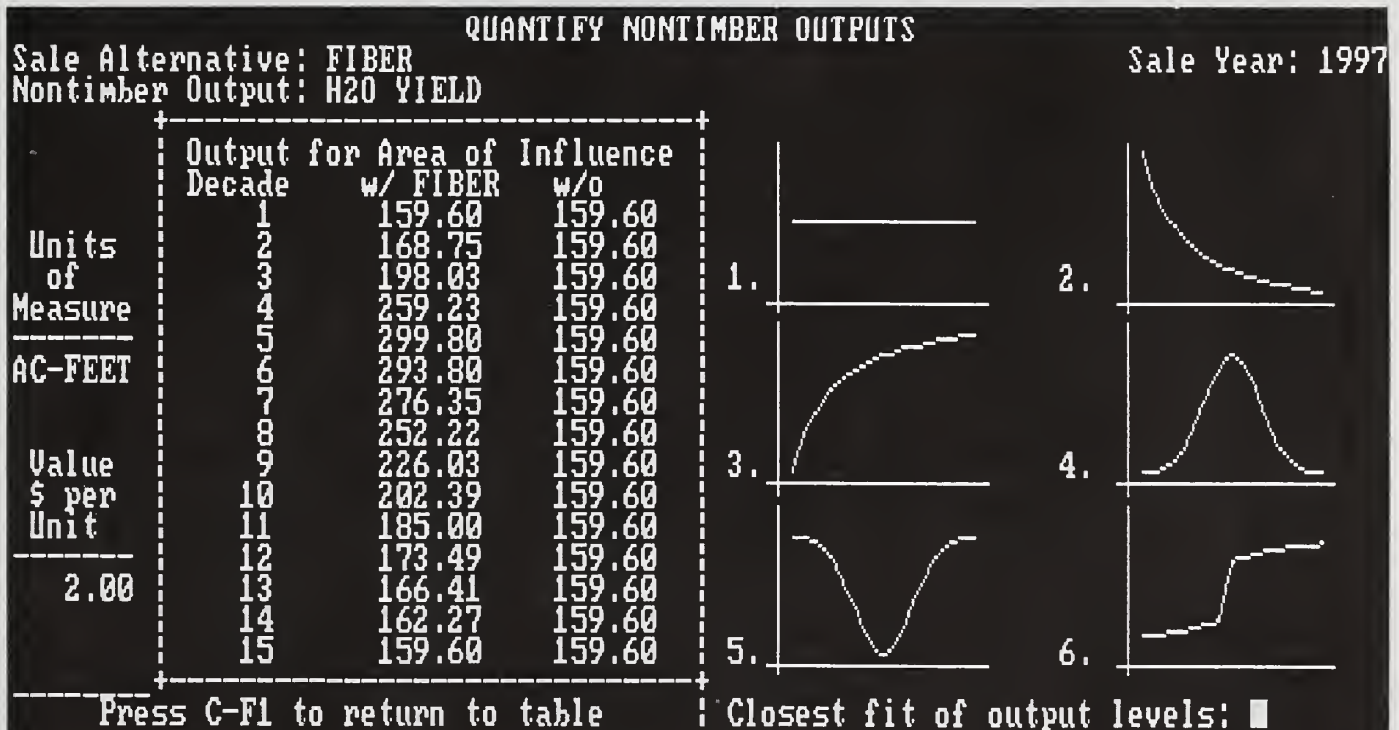


Exhibit 16

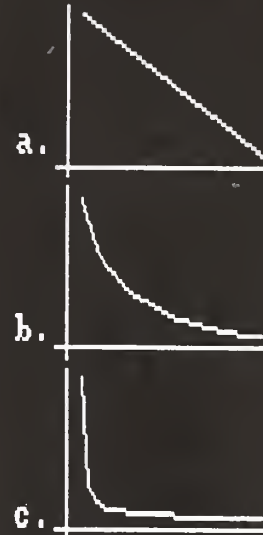
QUANTIFY NONTIMBER OUTPUTS

Sale Alternative: FIBER
Nontimber Output: H2O YIELD

Sale Year: 1997

	Decade	Output for Area of Influence	
		w/ FIBER	w/o
Units of Measure	1	159.60	159.60
	2	168.75	159.60
	3	198.03	159.60
	4	259.23	159.60
	5	299.80	159.60
AC-Feet	6	293.80	159.60
	7	276.35	159.60
	8	252.22	159.60
	9	226.03	159.60
	10	202.39	159.60
Value \$ per Unit	11	185.00	159.60
	12	173.49	159.60
	13	166.41	159.60
	14	162.27	159.60
	15	159.60	159.60

2)



Press C-F1 to return to table

Closest fit of output levels: ■

the options for the downward sloping general curve form (general choice 2). Select the shape that best approximates the nontimber output. Next a few specific questions are asked that permit TSPAS_SP to transform the curve into a series of decadal outputs. Questions vary by curve form, but each asks for: (a) the output level for the first decade; (b) the last decade to be quantified; and (c) the output level for the last decade to be quantified. TSPAS_SP displays the question letter on the graph to clarify what value is being sought. Once these questions are answered, the outputs computed for the curve appear on the left side of the screen in the column where GRAPH INPUT (C-F1) was initially accessed. TSPAS_SP then asks **Exit graphics?** A "y" (yes) repositions the cursor back to the left side of the screen, in the column it left. Once on the left side of the screen, nontimber output levels can be edited, or replaced by another curve form. A "n" (no) response cycles through the curve parameter questions that can be edited and a new curve drawn. To move the cursor back to the left side of the screen, press GRAPH INPUT (C-F1). Press EXECUTE to save entered data and return to the Sale Alternative Data Menu.

Rate Nontimber Outputs

TSPAS_SP provides the option for rating sale alternatives according to their effect on specified nontimber outputs. This second option in the Sale Alternative Data Menu is designed for situations where there are insufficient data to quantify nontimber outputs.

When this menu choice is selected, specify a nontimber output to rate (exhibit 17). (INDEX can be useful here.) The nontimber output specified must be one of the "rated" outputs defined on the Nontimber Outputs screen

Exhibit 17

RATE NONTIMBER OUTPUTS

Nontimber Output: DIVERSITY

Sale Year: 1997

Output for Area of Influence	
Alternative	Rating
DIVER	+++
ELK	+
FIBER	-

Use one of
these scales:

MOST

1

+++

or

3

*

LEAST

F1=execute
F11=cancel/exit
F13=save
S-F11=back field
S-F2=index

(see exhibit 4). The three types of rating options are displayed on the left-hand portion of the screen: rank order (1, 2, etc.), relative magnitude (****, ***, etc.), and relative magnitude with direction (+++, etc., ---) (see Measuring Nontimber Outputs, page 11).

Note: the box heading indicates that the ratings apply to the geographical **Area of Influence**, as discussed earlier (see Quantify Nontimber Outputs, page 27). All sale alternatives currently defined are listed in the box under the heading **Alternative**. Ratings are entered in the column headed **Rating**. In the "rank order" option, sale alternatives are ordinaly rated, where 1 represents the most with regard to the output specified, 2 represents second most, and so on. In the "relative magnitude" option, sale alternatives are rated with up to four asterisks (****), depicting the relative magnitude of nontimber output between the alternatives. In the "relative magnitude with direction" option, sale alternatives are rated with up to three plus (+++) or minus signs (---) in the rating column. This option provides both the direction of change (positive (+) and negative (-)) and the relative magnitude of change.

Nonharvest Activities

When this third item from the Sale Alternative Data Menu is selected, the screen in exhibit 18 appears. Complete this screen for each sale alternative having planned nonharvest activities. After **Sale Alternative** is specified, enter the name of **nonharvest activities**, such as fertilizing. When a new nonharvest activity description is entered, the data-entry window shown in exhibit 19 appears. First, enter the **Year(s)** from the sale year the activity is planned, using commas to separate more than one year. The current harvest entry is counted as year 0. Next, enter the **Cost** of the activities in analysis-year dollars, either on a per-acre or total-cost-for-the-alternative basis.

Exhibit 18

NONHARVEST ACTIVITIES

Sale Alternative: DIVER

Sale Year: 1997

Analysis Year: 1995

Description	Years from 1997	Cost	Primary Output	KV Funded
-----	-----	-----	-----	-----
a.		.00		
b.		.00		
c.		.00		
d.		.00		
e.		.00		
f.		.00		
g.		.00		
h.		.00		
i.		.00		
j.		.00		
k.		.00		
l.		.00		
m.		.00		
n.		.00		
o.		.00		

F1=execute F11=cancel/exit F13=save S-F2=index S-F11=back field

Exhibit 19

NONHARVEST ACTIVITIES

Sale Alternative: DIVER

Sale Year: 1997

Analysis Year: 1995

Description			

a. WALLOW	Input Data for WALLOW		
b.			
c.	Year(s) from 1997 for WALLOW		
d.	(separate with commas):		
e.			
f.	Cost of WALLOW:		
g.	Cost per acre: _____		
h.	-OR-		
i.	Total Cost: .00		
j.			
k.	Primary output associated with		
l.	WALLOW: _____		
m.			
n.	Is WALLOW to be funded by KV? (y/n):		
o.			

F1=execute F11=cancel/exit F13=save S-F2=index S-F11=back field

Record the **Primary output associated** with the activity next. This output must be one of the timber products or nontimber outputs defined through the Sale Data Menu. (INDEX can be useful here.) Finally, indicate whether the activity is **funded by K-V dollars**. When the window has been completed, select EXECUTE to return to the original screen. Once entered, data for the nonharvest activities can be edited in the fields on the screen itself.

Road Costs

This fourth item in the Sale Alternative Data Menu accesses the screen for entering the road-related costs for a sale alternative—the Road Costs screen (exhibit 20). Though not required, all cutting units in the sale alternative should be identified (as through prescriptions) before entering road costs. After specifying the **Sale Alternative** being evaluated, indicate whether specified roads are to be constructed by the timber purchaser (a) or the Forest Service (b). This choice not only affects calculation of purchaser road credit, but net sale value as well. If specified roads are Forest Service constructed, the total cost of specified roads is treated as a cost. In contrast, if specified roads are constructed by the purchaser, only the portion of road costs covered by effective purchaser road credits is reflected in calculations. When residual value appraisal is used for the existing stand, enter temporary roads and road maintenance costs, in addition to specified road costs.

Costs can be entered as **total dollar costs** for the sale alternative or **cost per unit of timber output**. If a total cost is entered, TSPAS_SP calculates and displays that cost on a cost per unit of output basis; the cursor then moves to the next total cost field or to the bottom of the screen. If the total cost field is skipped (NEWLINE is pressed on the blank field for total cost), the cursor moves to the cost/unit of output field. After road costs are entered, the cursor moves to the bottom portion of the screen.

Exhibit 20

ROAD COSTS

Sale Alternative: DIVER

Sale Year: 1997
Analysis Year: 1995

Specified Road Construction: A

(a) Purchaser (b) Forest Service

Specified Roads -> Enter total cost: .00 OR cost/MBF: 51.00

Enter road cost saved by dropping one cut unit, keeping others the same:

Dropped Unit	Total Road Cost Saved
-----	-----
1	.00
2	.00
3	.00
4	20000.00
5	20000.00

F1=execute

F11=cancel/exit

F13=save

S-F11=back field

The bottom of the screen asks for incremental (or marginal) road costs associated with individual cutting units. Incremental costs are reported in the appraisal analysis for a sale alternative. The user is asked to:

**Enter road cost saved by dropping one cut unit,
keeping others the same**

In other words, enter the *total* road cost (not cost per unit of output) that would be saved if the highlighted cutting unit were dropped from the sale alternative while keeping all other units in the sale. Next, enter the total road costs saved by dropping the next cutting unit listed, but keeping all other units, including the previous cutting unit. This is done for each cutting unit in the sale alternative. Note: individual, incremental road costs cannot exceed total road costs. Cutting units beyond the ninth unit do not appear on the screen; they are accessed when NEWLINE is pressed at the bottom of the screen. Selecting EXECUTE returns to the Sale Alternative Data Menu. (The Save procedure can be useful here.)

**Harvest Rates and
Forest Service Costs**

Selecting this fifth item from the Sale Alternative Data Menu accesses the screen for entering harvest rates and Forest Service costs (exhibit 21). The harvest rate (or cut profile) determines the amount of timber harvested each year over the duration of the timber sale contract. Though harvest rate has no effect on stumpage appraisal, it does affect the timing of timber sale receipts and, therefore, all present value calculations. TSPAS_SP summarizes Forest Service cost information into three categories: pre-sale, sale, and post-sale costs when performing net sale value calculations, both discounted and undiscounted. These data are provided for the current entry in the existing stand, the sale being planned.

Exhibit 21

HARVEST RATES AND FOREST SERVICE COSTS (Current Entry)

Sale Alternative: ELK

Sale Year: 1997
Analysis Year: 1995

Contract Length: 1 years

Harvest Rate:	1.	0	% of Sale Harvested	Total Harvest %
			100.00	100.00

Forest Service Costs

Cost Category	Basis	Cost	Years from 1997
a. ADMIN	Total	.00/MBF	0
b. usfs 1	Total	.00/ACRE	0
c. acre1	Total	41.81/ACRE	-5
d. acre2	Total	.00/ACRE	0
e. tmbf1	Total	15.68/MBF	4
f. tmbf2	Total	.00/MBF	0
g. ymbf1	Year	12.54/MBF	0
h. ymbf2	Year	8.36/MBF	2

F1=execute

F11=cancel/exit

F13=save

S-F11=back field

After specifying the **Sale Alternative** (INDEX can be useful here), specify the **length** of the timber sale **contract**. Harvest rate information is provided through information pairs: harvest year and percent of sale harvested in that year. For example, if one third of the sale volume is harvested during the sale year and two thirds of the volume 1 year later, enter "0, 33.33" and "1, 66.67," respectively. TSPAS_SP displays a cumulative total of the percentages under the heading **Total Harvest %**. Note: harvest rates apply to both primary and secondary timber products. Press NEWLINE to enter harvest rate data for another year; the fields scroll; press BACK FIELD to scroll in reverse. Pressing NEWLINE on a blank **Years from** field moves the cursor to the bottom portion of the screen.

Forest Service timber sale preparation and administration costs are entered on the bottom of the screen. The TSPAS Information Manager provides up to 10 cost categories, along with their respective calculation bases and units of measure (volume or area). The user cannot modify or supplement these categories, only accept or modify default costs and indicate when the costs will occur. The term **Basis** refers to the calculation basis, and has two levels—total and year. Consider the case of an administration cost of \$25 per MBF occurring in the second year of the sale. If the calculation basis is "total," the total sale harvest volume is multiplied by \$25 per MBF to determine the cost in the second year. If the calculation basis is "year," the volume harvested in the second year only is multiplied by \$25 per MBF. The volume harvested in any given year is determined by the harvest rates specified on the upper portion of this screen. Note: harvest volumes include both primary and secondary timber products.

When the Forest Service Costs portion of the screen is accessed, the cursor will be located in the **Cost** column for the first cost category. After accepting or modifying the default cost provided, and pressing NEWLINE, the cursor moves to the **Years from** column. Enter the number of years from the sale year the cost is expected to occur. Costs in the sale year are entered as "0." A cost incurred 3 years before the sale is entered as "-3." A cost incurred 1 year after the sale year is entered as "1". Enter up to eight, year designations for each cost category, as appropriate, and as space permits. Accept or modify all default cost values in analysis-year dollars, except for costs incurred *before* the sale year (for example, 3 years before the sale), which are entered as actual dollars in the year incurred. Note: setting the cost to \$0.00 is the only way to prevent inclusion of a cost, because the **Years from** default is always "0," meaning the sale year.

Reports Menu

Several output reports are available in TSPAS_SP for displaying and summarizing sale data. To access the menu for choosing outputs (exhibit 22), select **4. Reports** in the Main Menu and specify the report desired. If the report has already been prepared and a report file exists, TSPAS_SP asks if the file should be overwritten. TSPAS_SP begins the calculations and writes the results to the file identified on the screen. The calculation and writing process can take several minutes; be patient. Once completed, TSPAS_SP asks whether the report file should be sent to the default printer or viewed on the monitor. The report now resides in an IS file, which can be printed, viewed, or deleted by selecting **4. Access Report Files** from the Utilities Menu. There are seven types of reports, ranging from appraisal summary comparisons to lists and categories.

Exhibit 22

REPORTS

1. Appraisal Comparisons by Cutting Unit
 2. Appraisal Comparisons by Sale Alternative
 3. Appraisal Summary
 4. Overall Management Summary
 5. Overall Management Comparisons by Sale Alternative
 6. Sale Data and Information
 7. Default Database Lists with Descriptions
 8. Return to Main Menu
-

Enter choice: 1

Appraisal Comparisons by Cutting Unit

This first report summarizes appraisal information for each cutting unit in a sale alternative. It shows the contribution of each cutting unit to the overall appraised value of the sale alternative. The report's timeframe is the current entry only. The format for the report created by this option varies by the appraisal method selected for the sale.

Exhibit 23 illustrates the report created for transactions evidence appraisal (existing stand). Each column presents the information for a **cutting unit** (identified at the top of the column) except for the farthest-right column, which applies to the entire sale alternative. If there are more cutting units than fit on a single page, additional pages are used. Note: information in the upper portion of the report is expressed on the basis of dollars (analysis year) per unit volume and only pertains to the primary timber product. Following some descriptive information on harvest volume and cutting unit size, the TEA predicted value is displayed for each cutting unit. This label refers to whatever value is estimated by the transactions evidence model (such as Gross Stumpage Value). Next a series of adjustments needed to convert the TEA predicted value to **Predicted HIGH BID** is displayed. The **Bid Adjustment**, also known as the statistical adjustment factor, is subtracted from the Predicted HIGH BID to estimate the **INDICATED ADVERTISED RATE**. All appraisal terms follow standard Forest Service practices. Though values for the overall sale are calculated separately from those for cutting units, they are approximately the weighted average of the cutting unit values. **Incremental Road Costs** information is present only if the purchaser is responsible for road construction. In cutting unit columns, this corresponds to the prorata portion (value-weighted) of the incremental road costs assigned to the primary timber product on an individual cutting unit (see exhibit

Exhibit 23

Report 1. APPRAISAL COMPARISONS by Cutting Unit -- Current Entry

Timber Sale: BIG BEAR
Alt: FIBER

Forest: ST JOE
Sale Year: 1997

District: BRUSH CREEK
Product: SAWTIMBER

CUTTING UNIT:	1	2	3	4	SALE
Harvest Vol (MBF):	275.0	250.0	350.0	300.0	1175.0
Acres:	20	30	40	30	120

	----- (1995 \$ per MBF) -----				
GROSS STUMPAGE VALUE:	264.54	258.55	260.24	243.43	256.55
...ENVIRON PROTECT:	5.00	10.00	15.00	25.00	14.15
...ROAD MAINTENANCE:	10.00	12.00	14.00	16.00	13.15
...TEMP DEVELOPMENT:	1.00	2.00	4.00	16.00	5.94

Predicted HIGH BID:	248.54	234.55	227.24	186.43	223.32
...Bid Adjustment:	30.00	30.00	30.00	30.00	30.00
INDICATED ADV RATE:	218.54	204.55	197.24	156.43	193.32
...Base Rate:	54.18	29.00	44.57	39.33	42.17
ADVERTISED RATE:	218.54	204.55	197.24	156.43	193.32
...Predicted Bid Premium:	30.00	30.00	30.00	30.00	30.00
Predicted HIGH BID:	248.54	234.55	227.24	186.43	223.32
...Incr Road Costs:	.00	80.00	85.71	166.67	127.37
NET VALUE (1):	248.54	154.55	141.53	19.76	95.95

	----- (1995 \$1000) -----				
Net Value (1):	68.3	38.6	49.5	5.9	112.7
...Other Timber Products:	.6	.0	.0	.0	.6
...Other Incr Road Costs:	.0	.0	.0	.0	.3
...FS-Built Roads:	.0	.0	.0	.0	.0
TOTAL TIMBER VALUE:	68.9	38.6	49.5	5.9	113.0
...K-V Costs:	13.7	6.3	14.0	10.5	50.5
...FS Costs ...Pre-Sale:	.8	1.2	1.6	1.2	4.8
...Sale:	4.2	4.3	5.9	4.8	19.2
...Post-Sale:	4.4	3.8	5.3	4.5	17.9
NET VALUE (2):	45.8	23.1	22.8	-15.1	20.6

	----- (PV 1995 \$1000 @ 4.0%) -----				
Net Value (1):	59.6	32.9	42.2	10.4	95.5
...Other Timber Products:	.5	.0	.0	.0	.5
...Other Incr Road Costs:	.0	.0	.0	.0	.3
...FS-Built Roads:	.0	.0	.0	.0	.0
TOTAL TIMBER VALUE:	60.2	32.9	42.2	10.4	95.7
...K-V Costs:	12.1	5.5	12.3	9.3	44.3
...FS Costs ...Pre-Sale:	.7	1.1	1.5	1.1	4.5
...Sale:	3.8	3.9	5.3	4.3	17.3
...Post-Sale:	3.5	3.0	4.1	3.5	14.1
NET VALUE (2):	40.0	19.5	18.9	-7.8	15.5

NOTE: K-V & FS Costs includes all products

20—bottom). In the sale column, incremental road costs are the total of effective purchaser road credits associated with the primary product. **NET VALUE (1)** is the Predicted High Bid minus Incremental Road Costs.

The middle section of the report expresses quantities in terms of total dollars (analysis year) for both primary and secondary timber products. The first half presents undiscounted values. **NET VALUE (1)** here is the previous line multiplied by harvest volume and expressed in thousands of dollars. **Other Timber Products** is the gross value from all secondary timber products. **Other Incremental Road Costs** are the **prorata** portion (value-weighted) of incremental (purchaser-built) road costs assigned to secondary timber products. Information on **FS-Built Roads** appears only if the Forest Service is responsible for road construction. In cutting unit columns, this corresponds to incremental road-related costs that can be associated with an individual cutting unit (see exhibit 20—bottom). In the sale column, **FS-Built Roads** is the amount of total road costs for the sale alternative (see exhibit 20—top). **TOTAL TIMBER VALUE** is Net Value (1) plus Other Timber Products, minus Other Incr Road Costs, minus FS-Built Roads. The **K-V Costs** for a cutting unit correspond to the unit's essential regeneration costs for all timber products. The K-V costs for the sale alternative are the essential regeneration costs plus other fundable K-V costs; K-V Costs are limited to the maximum amount of K-V costs available for the sale. The **FS Costs** are the prorata portion (volume- and area-weighted) of the sale alternative's Forest Service costs (see exhibit 21) assigned to the cutting unit. Forest Service costs are divided into three categories, based on when they occur: **Pre-Sale** costs occur before the sale year; **Sale** costs occur during the sale, the sale year through contract length; and **Post-Sale** costs occur after the sale. Finally, **NET VALUE (2)** is the Total Timber Value, less K-V Costs, less FS Costs.

The bottom portion of the report is expressed in thousands of discounted dollars. The discount rate used in calculations is shown in the heading. All labels have the same meanings as before, but the values are compounded or discounted, based on their timing—the year in which they occur. Timber products (primary and secondary) are assumed to be harvested in accordance with the harvest rate. Incremental road costs (including effective purchaser road credits) are assumed to be earned and used, as permitted by the harvest rate. The FS-Built Roads are assumed to be built in the first year of the contract. The K-V costs are assumed to occur in accordance with the harvest rate.

Appraisal Comparisons by Sale Alternative

The second report summarizes appraisal information for the sale alternatives, for current entries only. The contents of the table vary by the appraisal method used in the sale.

Exhibit 24 illustrates the report created for transactions evidence appraisal. The format for this report is almost identical to that of the previous report, Appraisal Comparisons by Cutting Unit. Except, in this case, each column presents the information for the sale alternative identified at the top of the column. Information for each sale alternative is identical to the **SALE** column of the Appraisal Comparison by Cutting Unit report. Additionally, this report identifies the components of specified road costs—**Ineffective Road Credits** and **Effective Road Credits** available for each sale alternative. Ineffective credits are displayed for information only; they are not used in calculations.

Exhibit 24

Report 2. APPRAISAL COMPARISONS by Sale Alternative -- Current Entries

Timber Sale: BIG BEAR
Sale Year: 1997

Forest: ST JOE

District: BRUSH CREEK
Product: SAWTIMBER

SALE ALTERNATIVE:	DIVER	ELK	FIBER
Harvest Vol (MBF):	400.0	1000.0	1175.0
Acres:	140	140	120
	----- (1995 \$ per MBF) -----		
GROSS STUMPAGE VALUE:	248.60	250.98	256.55
...ENVIRON PROTECT:	30.97	20.25	14.15
...ROAD MAINTENANCE:	25.42	18.50	13.15
...TEMP DEVELOPMENT:	20.19	10.27	5.94
Predicted HIGH BID:	172.02	201.96	223.32
...Bid Adjustment:	30.00	30.00	30.00
INDICATED ADV RATE:	142.02	171.96	193.32
...Base Rate:	49.74	47.55	42.17
ADVERTISED RATE:	142.02	171.96	193.32
...Predicted Bid Premium:	30.00	30.00	30.00
Predicted HIGH BID:	172.02	201.96	223.32
...Ineffective Rd Credits:	.00	.00	.00
...Effective Rd Credits:	51.00	78.90	127.37
Predicted STAT HIGH BID:	121.02	123.06	95.95
	----- (1995 \$1000) -----		
Predicted STAT HIGH BID:	48.4	123.1	112.7
...Other Timber Products:	.0	.0	.6
...Other Eff Road Credits:	.0	.0	.3
...FS-Build Roads:	.0	.0	.0
TOTAL TIMBER VALUE:	48.4	123.1	113.0
...Essential Regen:	18.0	42.8	44.5
...Other K-V:	.2	.2	6.0
...FS Costs ...Pre-Sale:	5.9	5.9	4.8
...Sale:	20.5	12.5	19.2
...Post-Sale:	.0	15.7	17.9
NET SALE VALUE:	3.9	46.0	20.6
	----- (PV 1995 \$1000 @ 4.0%) -----		
Predicted STAT HIGH BID:	44.2	112.0	95.5
...Other Timber Products:	.0	.0	.5
...Other Eff Road Credits:	.0	.0	.3
...FS-Build Roads:	.0	.0	.0
TOTAL TIMBER VALUE:	44.2	112.0	95.7
...Essential Regen:	16.6	39.6	39.2
...Other K-V:	.2	.2	5.1
...FS Costs ...Pre-Sale:	5.7	6.3	4.5
...Sale:	18.5	11.3	17.3
...Post-Sale:	.0	12.3	14.1
NET SALE VALUE:	3.2	42.2	15.5

NOTE: Essential Regen and FS Costs include all products

Appraisal Summary

The third report provides more detailed appraisal information for the sale alternative specified. The contents of the report vary somewhat with the appraisal method used in the sale.

Exhibit 25 illustrates the report created for transactions evidence appraisal. The top portion of the report presents general appraisal information for the alternative specified. The information is almost identical to that shown in the Appraisal Comparisons by Sale Alternative. But this report identifies the total amount of **K-V Available**: the Statistical High Bid value net of base rates. Any available K-V represents an amount of nonharvest activities that could be funded with K-V.

The bottom portion of the report provides detailed appraisal information. Species harvested in the sale and their associated harvest volume and value are listed. TSPAS_SP accumulates these data, entered originally for each cutting unit, to their sale-level totals. Similarly, all TEA adjustors (variables) are listed, along with their sale-level values. Again, these data were originally entered for each cutting unit.

Overall Management Summary

The fourth report summarizes comprehensive information for the sale alternative specified—appraisal information, information on nontimber outputs, and information about future management. The information presented for the planned sale varies slightly according to the type of appraisal method used in the sale. But, the information regarding future timber management and nontimber outputs has the same format regardless of appraisal method.

The Overall Management Summary created for transactions evidence appraisal is presented in exhibit 26. The top of the table summarizes basic information for the sale alternative, including the number of acres, harvest volume, and the objectives specified for the sale alternative (see exhibit 3). The left top half displays the same appraisal information as previously discussed. The right top half of the table reports the present net value (PNV) associated with current and future management, expressed in thousands of analysis-year dollars.

The main difference between the tops of Report 4 and Report 3 is that Report 4 includes information on **All Entries**. Under **Existing Stands**, the PNV for **Future Entries** includes the timber-related costs and revenues associated with future harvests of the existing stand. This includes all future harvests in the existing stand through the final harvest, plus regeneration costs associated with those harvests. **Other Timber Costs** consists of timber management costs that are not included in the PNV for the current entry or future entries: (1) costs of nonharvest activities paid with appropriated funds; and (2) nonharvest costs that were marked for K-V funding but are not fundable because of insufficient K-V funds. Under **Regenerated Stands**, the PNV for **First Rotation** includes the timber-related costs and revenues associated with the first rotation of the regenerated stand. Regeneration costs are included at time of harvest, following the convention used for the existing stand. The PNV for **Other Rotations** includes the costs and revenues from all future rotations following the first rotation of the regenerated stand. Finally, **PNV Timber** is the discounted net value of all present and future timber-related costs and revenues.

The bottom portion of Report 4 summarizes nontimber output information for the sale alternative. The left-hand column identifies the **NONTIMBER OUTPUTS**, listing first each nontimber output assigned a dollar value. There are two fields to the right of the output names—**ratings** and **present value**.

Exhibit 25

Report 3. APPRAISAL SUMMARY -- Current Entry

Timber Sale: BIG BEAR Forest: ST JOE District: BRUSH CREEK Alt: FIBER
 Acres: 120 Vol: 1175.0 MBF Cut Units: 4 Sale Year: 1997 Product: SAWTIMBER

----- (1995 \$ per MBF)		----- (1995 \$1000)	
TEA PREDICTED VALUE:	256.55	Predicted STAT HIGH BID:	112.7
...ENVIRON PROTECT:	14.15	...Other Timber Products:	.6
...ROAD MAINTENANCE:	13.15	...Other Eff Road Credits:	.3
...TEMP DEVELOPMENT:	5.94	...FS-Built Roads:	.0
		TOTAL TIMBER VALUE:	113.0
		...Essential Regen:	44.5
		...Other K-V:	6.0
		...K-V Available:	63.2
Predicted HIGH BID:	223.32	...FS Costs ...Pre-Sale:	4.8
		...Sale:	19.2
...Bid Adjustments:	30.00	...Post-Sale:	17.9
		NET SALE VALUE:	20.6
INDICATED ADVERTISED RATE:	193.32		
		----- (PV 1995 \$1000)	
...Base Rate:	42.17	Predicted STAT HIGH BID:	95.5
ADVERTISED RATE:	193.32	...Other Timber Products:	.5
...Predicted Bid Premium:	30.00	...Other Eff Road Credits:	.3
Predicted HIGH BID:	223.32	...FS-Built Roads:	.0
		TOTAL TIMBER VALUE:	95.7
...Ineffective Road Credits:	.00	...Essential Regen:	39.2
...Effective Road Credits:	127.37	...Other K-V:	5.1
Predicted STAT HIGH BID:	95.95	...FS Costs ...Pre-Sale:	4.5
		...Sale:	17.3
		...Post-Sale:	14.1
		NET SALE VALUE:	15.5

TEA INFORMATION

Species	Volume	SPLT
-----	--MBF--	---\$/MBF--
DF	775.0	333.00
LPP	400.0	333.00
OVERALL	1175.0	333.00

VARIABLE	VALUE	VARIABLE	VALUE	VARIABLE	VALUE
-----	-----	-----	-----	-----	-----
%DEAD LPP (%)	14.68	%DFT (%)	10.00	%SKY (%)	35.74
ADBH (INCHS)	12.13	TOTAC (Acres)	120.00	TOTVOL (MBF)	1175.00

NOTE: Essential Regen and FS Costs include all products

Exhibit 26

Report 4. OVERALL MANAGEMENT SUMMARY

Timber Sale: BIG BEAR Forest: ST JOE District: BRUSH CREEK Alt: FIBER

Acres: 120 Vol: 1175.0 MBF Cut Units: 4 Sale Year: 1997 Product: SAWTIMBER

Objectives and Constraints: PRODUCE TIMBER AND WILDLIFE OUTPUTS, USING ECOSYSTEM MANAGEMENT PRINCIPLES, PAYING PARTICULAR ATTENTION TO WATER YIELD, HABITAT FRAGMENTATION, AND BIOLOGICAL DIVERSITY.

TIMBER HARVESTS

-----Current Entry-----
(1995 \$ per MBF)
TEA PREDICTED VALUE: 256.55

...Cost Adjustments: 33.23
Predicted HIGH BID: 223.32
...Bid Adjustment: 30.00
INDICATED ADVERTISED RATE: 193.32
...Base Rate: 42.17
ADVERTISED RATE: 193.32
Predicted HIGH BID: 223.32
...Ineffective Rd Credits: .00
...Effective Rd Credits: 127.37
Predicted STAT HIGH BID: 95.95

(1995 \$1000)
Predicted STAT HIGH BID: 112.7
...Other Timber Products: .6
...Other Eff Road Credits: .3
...FS-Built Roads: .0
TOTAL TIMBER VALUE: 113.0
...K-V Costs: 50.5
...FS Costs: 41.9
NET SALE VALUE: 20.6

-----Current Entry-----
(PV 1995 \$1000)

Predicted STAT HIGH BID: 95.5
...Other Timber Products: .5
...Other Eff Road Credits: .3
...FS-Built Roads: .0
TOTAL TIMBER VALUE: 95.7
...K-V Costs: 44.3
...FS Costs: 35.9
NET SALE VALUE: 15.5

-----All Entries-----
(PV 1995 \$1000)

Existing Stands
...Current Entry: 15.5
...Future Entries: .0
...Other Timber Costs: 5.4
TOTAL 10.1

Regenerated Stands
...First Rotation: -4.8
...Other Rotations: -1.0
TOTAL -5.8

PNV Timber: 4.3

NONTIMBER OUTPUTS

	Alt	Most	Least
	----- (Rating) -----		
ELK COVER	3	1	3
H2O YIELD	1	1	3
DIVERSITY	-	+++	-

-----Present Value (1995 \$1000)-----

Benefits	Costs	Net
-4.8	.0	-4.8
3.0	.0	3.0
PNV Nontimber:		-1.8

OVERALL PNV: 2.5

NOTE: \$.0 of K-V costs for nontimber are included in PNV for timber

The ratings field contains three rating headings: (1) the rating for the **Alternative**; (2) the rating for the alternative with the **Most** nontimber output; and (3) the rating for the alternative with the **Least** nontimber output. This format is continued for all forms of rating, and concludes with a comparison of physical outputs, expressed as the average annual net change (over decades 1 to 5 and 6+) from the without-sale situation to the sale alternative.

The second information field displays **Present Values**, expressed in analysis-year dollars. There are three headings: (1) **Benefits** is the net change in benefits (from the without-sale situation to the sale alternative), discounted to the analysis year; (2) **Costs** includes the costs of all non-harvest activities whose target output was the valued nontimber output; only costs paid with appropriated funds are included, including cost of activities earmarked for K-V funding but for which there were insufficient K-V funds; and (3) **NET** is the nontimber benefits minus the costs. The **PNV Non-timber** is the sum of net values over all nontimber outputs that have been assigned a value. Note, where appropriate, an entry appears at the bottom of the report, stating that a certain amount of **K-V costs for nontimber are included in PNV for timber**. This is the amount of K-V costs for nontimber purposes included in the K-V costs for the current entry in the upper part of the table. The last dollar entry is **OVERALL PNV**, which is the sum of PNV Timber and PNV Nontimber.

Overall Management Comparisons by Sale Alternative

The fifth report compares the overall management summaries for each sale alternative. Although there are minor differences in the appearance of this table, depending on appraisal method, these differences occur only in the appraisal information presented for the current harvest entry. The general format for these tables is illustrated by the transactions evidence format presented in exhibit 27. Each column contains data for a sale alternative. Information displayed corresponds to abbreviated versions of that shown in the **4. Overall Management Summary** tables. See that report discussion (previous section) for documentation of the components.

Sale Data and Information

At some point, the user may wish to inspect the data and information pertaining to the sale being developed. Each individual data-entry screen could be accessed. Alternatively, **6. Sale Data and Information** provides a listing of this information. The user should obtain and inspect this listing of sale data, even if no data-entry problems are suspected. Incorrect data should be corrected through TSPAS_SP data-entry screens.

Default Database Lists with Descriptions

The Default Database Lists with Descriptions report may be one of the most useful pieces of information provided by TSPAS_SP. It contains a complete listing of all categories and subcategories contained in the default database being used with a specific sale, along with their short and long descriptions. Exhibit 28 shows the top part of a default database Lists with Descriptions report; the actual report continues for several pages. The order of categories is always the same (**TIMBER PRODUCTS**, **NONTIMBER OUTPUTS**, and so on), even if certain categories are not used or described in the default database.

Utilities Menu

From time to time, the TSPAS_SP user may want to develop one sale alternative that differs only slightly from another. One alternative could

Exhibit 27

Report 5. OVERALL MANAGEMENT COMPARISONS by Alternative

Timber Sale: BIG BEAR

Forest: ST JOE
Sale Year: 1997

District: BRUSH CREEK
Product: SAWTIMBER

Objectives and Constraints: PRODUCE TIMBER AND WILDLIFE OUTPUTS, USING ECOSYSTEM MANAGEMENT PRINCIPLES, PAYING PARTICULAR ATTENTION TO WATER YIELD, HABITAT FRAGMENTATION, AND BIOLOGICAL DIVERSITY.

SALE ALTERNATIVE:	DIVER	ELK	FIBER
Acres:	140	140	120
Cutting Units:	5	5	4
Harvest Vol. (MBF):	400.0	1000.0	1175.0

TIMBER HARVESTS

--Current Entry	----- (1995 \$ per MBF) -----		
Predicted HIGH BID:	172.02	201.96	223.32
...Effective Rd Credits:	51.00	78.90	127.37
Predicted STAT HIGH BID:	121.02	123.06	95.95

	----- (1995 \$1000) -----		
Predicted STAT HIGH BID:	48.4	123.1	112.7
...Other Timber Products:	.0	.0	.6
...Other Eff Road Credits:	.0	.0	.3
...FS Built Roads:	.0	.0	.0
TOTAL TIMBER VALUE:	48.4	123.1	113.0
...K-V Costs:	18.2	43.0	50.5
...FS Costs:	26.3	34.1	41.9
NET SALE VALUE:	3.9	46.0	20.6

	----- (PV 1995 \$1000 @ 4.0%) -----		
Predicted STAT HIGH BID:	44.2	112.0	95.5
...Other Timber Products:	.0	.0	.5
...Other Eff Road Credits:	.0	.0	.3
...FS Built Roads:	.0	.0	.0
TOTAL TIMBER VALUE:	44.2	112.0	95.7
...K-V Costs:	16.8	39.8	44.3
...FS Costs:	24.1	30.0	35.9
NET SALE VALUE:	3.2	42.2	15.5

--All Entries	----- (PV 1995 \$1000 @ 4.0%) -----		
Current Entry:	3.2	42.2	15.5
Future Entries:	28.5	25.3	.0
Other Timber Costs:	.0	.0	5.4
Regenerated Stands:	13.3	31.5	-5.8
PNV TIMBER:	45.0	99.0	4.3

NONTIMBER OUTPUTS

	----- (PV 1995 \$1000 @ 4.0%) -----		
ELK COVER	-1.0	-.4	-4.8
H2O YIELD	.0	.0	3.0
PNV NONTIMBER	-1.0	-.4	-1.8
	----- (Rating) -----		
DIVERSITY	+++	+	-

OVERALL PNV(1995 \$1000):	43.9	98.6	2.5
---------------------------	------	------	-----

Exhibit 28

DEFAULT DATABASE LISTS WITH DESCRIPTIONS

Database Name: TE DEFAULT Effective Date: 1/1994
Timber Sale: BIG BEAR Forest: ST JOE District: BRUSH CREEK
Appraisal Method -- Current Stand: TE Regenerated Stand: TE

=====

----- TIMBER PRODUCTS -----

CODE	DESCRIPTION
POST-POLE	POSTS AND POLES
PULPWOOD	PULPWOOD
SAWTIMBER	SAWTIMBER

----- NONTIMBER OUTPUTS -----

CODE	DESCRIPTION
H2O YIELD	WATER YIELD

----- LOGGING COST CATEGORIES -----

CATEGORY	DESCRIPTION
LOW	LOW COST PER MBF CATEGORY
MEDIUM	MEDIUM COST PER MBF CATEGORY
HIGH	HIGH COST PER MBF CATEGORY

----- LOGGING METHODS -----

CODE	DESCRIPTION
TRACTOR	TRACTOR SKIDDING ONLY
CABLE	CABLE LOGGING
SKYLINE-S	SKYLINE < 2000 FT.
SKYLINE-L	SKYLINE > 2000 FT.
HELICOPTER	HELICOPTER LOGGING

be copied to create a new alternative, which could then be modified. Similarly, the user may wish to delete an entire sale from the TSPAS Sale Database. These and several other file management tasks are performed by utilities available in TSPAS_SP. The Utilities Menu shown in exhibit 29 is accessed by selecting **5. Utilities** from the Main Menu. Six functions are performed: copying, deleting, switching, accessing files, importing information, and setting a printer.

Copy

1. Copy in the Utilities Menu provides three options for copying: (1) the entire sale; (2) a sale alternative; and (3) a cutting unit. All three operate basically the same. After specifying what is to be copied (a sale, an alternative, or a cutting unit), specify the source of the copy (copy from) and the destination of the copy (copy to). Exhibit 30 illustrates the utility screen

Exhibit 29

UTILITIES

- | | |
|-----------------------------|-------------------------------|
| 1. Copy | (sale, alternative, cut unit) |
| 2. Delete | (sale, alternative, cut unit) |
| 3. Switch to Different Sale | |
| 4. Access Report Files | (print, view, delete) |
| 5. Import | (Default Database, TE Model) |
| 6. Set Default Printer | |
| 7. Return to Main Menu | |

Enter choice: 1

Exhibit 30

UTILITIES

- | | | |
|---------------------------------------|---|-------------------|
| 1. Copy | (sale, alternative, cut unit) | |
| | S=Sale, A=Alternative, C=Cutting Unit Enter choice: C | |
| 2. Delete | (sale, alternative, cut unit) | |
| +-----+-----+-----+-----+-----+-----+ | | |
| 3. Switc | COPY A CUTTING UNIT | |
| 4. Acces | Copy from | Copy to: |
| | Sale Alternative: | Sale Alternative: |
| 5. Impor | Cutting Unit: | Cutting Unit: |
| 6. Set D | -Press CANCEL/EXIT (F11) to return to menu- | |
| +-----+-----+-----+-----+-----+-----+ | | |
| 7. Return to Main Menu | | |

for copying a cutting unit. First specify the sale alternative containing the cutting unit to be copied and then the unit itself. (INDEX can be useful here.) The cursor moves to the right-hand side of the screen, where comparable destination information is provided. Sale alternatives can only be copied to create additional alternatives within a given sale. Cutting units, however, can be copied both within a given sale alternative and between sale alternatives.

Delete

2. Delete in the Utilities Menu provides three deletion options: (1) the entire sale; (2) a sale alternative; and (3) a cutting unit. Use the delete utility cautiously, because once a sale, sale alternative, or cutting unit is deleted, it cannot be retrieved. All options operate the same way: specify the entity (a sale, alternative, or cutting unit) to be deleted and then provide origin information. (INDEX can be helpful here.) Deleting an alternative or cutting unit from a different sale first requires switching to that sale.

Switch to Different Sale

A TSPAS_SP user may want to work on several timber sales in one work session. The user can exit from TSPAS_SP, then re-enter TSPAS_SP under a new sale name. Alternatively, the user can choose **3. Switch to a Different Sale** from the Utilities Menu. After the name of an existing sale is specified, TSPAS_SP switches to that sale and alerts the user. (INDEX can be useful here.) If a new sale name is specified, TSPAS_SP treats it as a new sale and initiates those procedures (see Main Menu, page 13).

Access Report Files

One result of implementing the Reports Menu is that one or more report files will be created (see Reports Menu, page 35). Report files can be printed, viewed, or deleted. Exhibit 31 shows the report access screen obtained by selecting **4. Access Report Files** in the Utilities Menu. Provide TSPAS_SP with the name of the file being accessed. (INDEX can be useful here.) (Renaming an existing file must be done outside TSPAS_SP using standard IS commands.) To be accessible by TSPAS_SP, file names must adhere to the following convention:

Exhibit 31

UTILITIES

1. Copy (sale, alternative, cut unit)
2. Delete (sale, alternative, cut unit)
3. | PRINT, VIEW, OR DELETE A REPORT FILE |
4. | File: |
5. | |
6. | -Press CANCEL/EXIT (F11) to return to menu- |
7. Return to Main Menu

SaleName.Report_i, or
SaleName.AlternativeName.Report_i,

where "i" is replaced by the number corresponding to the report (for example, report 4 is coded "4") and each blank in the sale name is replaced with an underscore (_).

After identifying the file, the choices are printing on the default printer; viewing on the computer monitor; or deleting from the IS drawer/folder. If a default printer has not been specified before a file is printed, TSPAS_SP requests completion of that information first (see Set Default Printer, page 31). The following function keys can be used to view the file: NEXT SCREEN (F4); PREVIOUS SCREEN (F3); VIEW HELP (S-F1); GO TO line # (S-F5); FIND string (S-F6); remove line numbers toggle (S-F15); and CANCEL/EXIT (F11). The cursor keys also can be used to negotiate throughout the file. If a DG terminal is being used, the N/C key can display the file in compressed mode, thereby displaying more of the file. Once deleted, a file cannot be undeleted. It can, however, be generated again through the Reports Menu.

Import

From time to time, the user may need to retrieve a default database or a TE model residing in another location. For example, a Ranger District on one Forest may want to use a default database possessed by another Forest; or all Forests within a Region may need to acquire TE models developed by Regional Office personnel. This task is accomplished by the Import option on the Utilities Menu. In fact, unless TSPAS_DDP is available at the local site, all default databases and TE models available to TSPAS_SP will be the result of using the Import option.

The Import option is activated by selecting **5. Import** from the Utilities Menu. Indicate if a default database or TE model is to be imported. Next, specify the name of the file to be imported, as discussed below. (INDEX can be useful here.) Once imported, the name of the new database or TE model can be displayed with INDEX. The import file must reside on the host computer in a drawer and folder accessible by TSPAS_SP. This means the desired file has already been obtained by mail or RIS (Retrieval Information System) and filed into IS. We use the following naming convention for import files: for database files, "DataBaseName.IMPORT"; and for TE models, "DataBaseName.InformationName.IMPORT". (Spaces in the names, are replaced with underscores, "_".)

Set Default Printer

6. Set Default Printer establishes where TSPAS_SP reports are printed. Access the Set Default Printer option and provide the name of the desired printer. If the printer name is not known, consult with local computer system personnel, because the INDEX function will not provide that information. If the printer specified exists, TSPAS_SP asks if it is a laser printer. If so, TSPAS_SP asks if the printer is (1) a DG laser or emulates a DG laser or (2) an HP laser or emulates an HP laser. Once the default printer is specified, it remains in effect until changed. The newly-specified default printer controls printed output for all sales using TSPAS-SP in the local computer system, including previously planned sales.

Reference

Jones, J. Greg; Meacham, Mary L.; Schuster, Ervin G.; Cahoon, Rick D. [In press]. A guide to the TSPAS Default Database Program. General Technical Report. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station.

Appendix A: Glossary

An alphabetical listing of the important words and terms used in construction of the TSPAS Sale Database and operation of the TSPAS_SP program. Each word or term is followed by a short definition or description, as appropriate. If a definition requires use of another glossary-defined term, that term appears in upper- and lower-case letters.

Advertised Rate—The minimum dollar amount for which a timber offering can be sold, measured in dollars per Unit of Measure for Primary Timber Product. It equals the larger of Indicated Advertised Rate or Base Rate.

Analysis Year—The year for which all analyses pertain, normally the current year. All monetary values (benefits and costs) displayed on screens are based on that year.

Analysis-Year Dollars—Dollars having the same purchasing power as dollars in the Analysis Year. These monetary values appear on output reports.

Area of Influence—The general geographical area surrounding the sale that will encompass nontimber output considerations. This area will vary with the nontimber output; it may be as small as the sale boundary or as large as several States as in the case of migratory animals.

Base Rate—A floor for Advertised Rate. It is the minimum amount for which timber can be sold, and is measured in dollars per Unit of Measure for Primary Timber Product. Base Rate is the sum of the weighted average Minimum Bid Rate across all timber species (where the weights are based on the species harvest volumes), plus Essential Regeneration.

Bid Adjustment—A category on the Transaction Evidence Appraisal output reports. Sometimes referred to as a "statistical adjustment factor," the bid adjustment is used to establish the Indicated Advertised Value. High Bid minus the Bid Adjustment equals Indicated Advertised Rate.

Bid Premium—An estimate of the average amount by which the winning bid for the sale is expected to exceed the Advertised Rate, measured in dollars per Unit of Measure. Bid Premium is calculated as a weighted average across all timber species, where weights are based on the species harvest volumes. Bid premium is used in Residual Value Appraisal.

Contract Length—The number of years in the sale being planned.

Cubic Feet per Unit—The number of cubic feet of solid wood per Unit of Measure for the Primary Timber Product.

Current Entry—The first timber harvest being planned for a Cutting Unit. This is the timber sale being planned.

Cutting Unit—A contiguous tract of land on which timber is harvested or planned to be harvested.

Decade—Decades are used to specify the timing of Nontimber Outputs and timing in the Regenerated Stand. For Nontimber Outputs, decade refers to 10-year periods beginning with the Sale Year. For the Regenerated Stand, decades are counted from the establishment of that stand.

Default Database—The database that provides the default values for TSPAS_SP. It is developed and maintained by the TSPAS Information Manager. Selection of the default database determines method of appraisal used.

Direction NT—An item on the management summary output reports referring to Nontimber Outputs rated using the magnitude with direction option.

Effective Road Credits—The credits from construction of Specified Roads that a timber purchaser can use as payment (credit) for timber. Effective credits are calculated as the smaller of: (a) Specified Road costs or (b) the difference between High Bid minus Base Rate. In TSPAS_SP, effective purchaser road credits are apportioned to timber products in proportion to their total value.

Entry #—The sequential order of harvests planned for a Cutting Unit. The Current Entry is Entry #1, the second #2, and so on. Numbering starts with #1 for the Existing Stand and #1 again for the Regenerated Stand.

Environmental Protection Costs—The cost of timber sale-related activities required for environmental protection (erosion control or fire prevention), measured in dollars per Unit of Measure. Used in Residual Value Appraisal.

Essential Regeneration—The cost of the minimum regeneration activities required to satisfy regeneration requirements, measured in dollars for Unit of Measure.

Estimated # of Cutting Units—A field on the Transactions Evidence Appraisal screens for entering the estimated number of cutting units that will comprise the complete sale alternative. This number is used in computing various appraisal components displayed on the Transaction Evidence Appraisal screens. (Note: output report computations use the actual number of Cutting Units in a Sale Alternative rather than this preliminary estimate.)

Existing Stand—The timber stand that currently exists on a Cutting Unit, as opposed to the Regenerated Stand.

Felling & Bucking Costs—Logging costs associated with felling and bucking trees, expressed as dollars per Unit of Measure for Primary Timber Product. Used in Residual Value Appraisal.

Final Harvest (Existing Stand)—The harvest entry that removes all the remaining trees from the Existing Stand. The final harvest marks the transition from the Existing Stand to the Regenerated Stand.

First Rotation—The first rotation of the regenerated stand. A rotation refers to a “timber crop,” beginning with the establishment of the stand and ending with the Final Harvest of that stand.

Forest Plan Information—A field on the Sale Description screen for documenting the objectives and constraints of the proposed timber sale. Although this information does not affect any calculations, it appears in several reports.

Forest Service Costs—Costs associated with planning and administering a timber sale. They can be expressed in dollars per acre or dollars per Unit of Measure for the Primary Timber Product. “Basis” on the Harvest Rates and Forest Service Costs screen identifies whether the dollar cost applies to the entire sale volume (Basis = Total) or only to the volume harvested in the year of the cost (Basis = Year). In reports, costs occurring before the Sale Year are termed “pre-sale;” those during the sale contract are termed “sale;” and those after the sale contract are termed “post-sale.”

Future Entry—Any harvest after the Current Entry (entry #1) planned for the Existing Stand or the Regenerated Stand.

Harvest Entry—A planned harvest for a Cutting Unit. It could be the Current Entry or a Future Entry.

Harvest Rate—The percentage of the sale volume harvested in each year of the sale contract, as specified on the Harvest Rate and Forest Service Costs screen.

Harvest Volume—An item in several reports referring to the total amount of Primary Timber Product to be harvested for a Cutting Unit or Sale Alternative, measured in Units of Measure for Primary Timber Product.

Haul Costs (Incl. Maintenance)—The cost of transporting logs from landing to processing facility, including road maintenance costs associated with hauling, expressed as dollars per Unit of Measure for Primary Timber Product. Used in Residual Value Appraisal.

Haul Costs (W/O Maintenance)—The cost of transporting logs from landing to processing facility, but excluding road maintenance costs, expressed as dollars per Unit of Measure for Primary Timber Product. Used in Residual Value Appraisal.

High Bid—The amount the winning bidder is predicted to offer for a timber sale, expressed as dollars per Unit of Measure. For Residual Value Appraisal, High Bid equals the Advertised Rate plus the Bid Premium. For Transaction Evidence Appraisal, High Bid is the value predicted by the TE Model minus the cost adjustment(s) specified on the appraisal screen by the TSPAS Information Manager.

Incremental Road Costs—The additional road-related costs uniquely associated with accessing a specific Cutting Unit. This includes only the portion of road needed to access that Cutting Unit and no others in the Sale Alternative. These costs are measured as the change (savings) in road costs associated with dropping a specific Cutting Unit from the sale. They come from the Total Road Cost Saved section of the Current Road Costs screen. Road-related costs consist of Specified Road costs for Transaction Evidence Appraisal, and Specified Road Costs, plus Temporary Roads, plus Road Maintenance costs for Residual Value Appraisal.

Indicated Advertised Rate—A preliminary estimate of the Advertised Rate. In Residual Value Appraisal, it is the Mill-Delivered Value minus Stump-to-Mill Costs. In Transaction Evidence Appraisal, it is calculated by applying a Bid Adjustment (as specified by the TSPAS Information Manager) to High Bid.

Inflation Rate—The average increase in the general level of prices throughout the economy, expressed as an annual percentage rate of change.

K-V Available—An item appearing in several output reports that indicates the amount of Knutson-Vandenberg funds available for Other K-V activities, that is, other than K-V Essential Regeneration. It is computed as:

$$\begin{aligned} \text{Max Available} = & (HBP - BRP) * VOLP + \text{Sum} [(HBS_s - BRS_s) * VOLS_s] \\ & - [(ERC) * (VOLP)] \end{aligned}$$

where:

HBP = High Bid for the Primary Timber Product for the Sale Alternative,

BRP = Base Rate for the Primary Timber Product for the Sale Alternative,

HBS_s = High Bid for Secondary Timber Product (s) for the Sale Alternative,

BRS_s = Base Rate for Secondary Timber Product (s) for the Sale Alternative,

ERC = Effective Road Credits,

VOLP = Harvest volume for the Primary Timber Product for the Sale Alternative,

VOLS_s = Harvest volume for Secondary Timber Product (s) for the Sale Alternative.

K-V Costs—An item in several reports displaying the total expected Knutson-Vandenberg costs for a Sale Alternative. It equals the sum of K-V Essential Regeneration and Other K-V.

K-V Essential Regeneration—The cost of the minimum regeneration activities required for a Sale Alternative.

K-V Funded—An item on Nonharvest Activities screen for identifying activities for “sale area betterment” to be paid with Knutson-Vandenberg funds. A response of “y” indicates that the activity is to be funded with Knutson-Vandenberg dollars, and “n” indicates it is to be funded with appropriated dollars.

Log Value—The value of logs delivered to a processing facility, expressed as dollars per Unit of Measure for Primary Timber Product. Used in Residual Value Appraisal, it is calculated separately for each timber species as:

$$\text{Log Value} = (\text{Price}) (\text{Recovery}) - \text{Manufacturing Cost}$$

Logging Cost Categories—Categories for logging costs that are developed by the TSPAS Information Manager and appear on the Harvest Prescription (Existing Stand) screen. Used in Residual Value Appraisal. The default values for Skidding & Loading and Felling & Bucking Costs are stored by Logging Method and Logging Cost Category.

Logging Methods—Categories for logging methods that are developed by the TSPAS Information Manager and appear on the prescription screens for both the existing and regenerated stands. Used in Residual Value Appraisal. The default values for Skidding & Loading costs and Felling & Bucking costs are stored by Logging Method and Logging Cost Category.

Magnitude NT—An item in the management summary output tables referring to Nontimber Outputs rated using the relative magnitude option.

Management Intensity—Categories for the amount or level of management applied to the Regenerated Stand. Four categories are defined in TSPAS: L (low), M (medium), H (high), and S (special—for uneven-aged management). The TSPAS Information Manager specifies the management represented by each of these categories and enters the associated yields for

the Timber Strata. Users select Management Intensity on the Regenerated Stand Prescription screen.

Manufacturing Cost—The cost of manufacturing delivered logs into a Timber Product ready for shipping; expressed in dollars per Unit of Measure for Primary Timber Product (log scale).

Mill-Delivered Value—The weighted average log value across species, where the weights are based on the species harvest volumes. It is computed for each harvest entry on each cutting unit in Residual Value Appraisal.

Minimum Bid Rate—The minimum amount per Unit of Measure for Timber Products that must be returned to the U.S. Treasury. There is a Minimum Bid Rate for each species. Rates are specified by the TSPAS Information Manager.

Net Sale Value—An item in several reports that estimates the net revenue of a Sale Alternative. It equals the Total Timber Value minus K-V Costs minus Forest Service Costs.

Net Value (1)—An item in several reports that estimates the gross revenue the Forest Service will receive from the harvest of a Cutting Unit. It equals High Bid minus Incremental Road Cost. In the case of an entire Sale Alternative, it equals High Bid minus Effective Road Credits.

Net Value (2)—An item in several reports that estimates the net revenue the Forest Service will receive from the harvest of a Cutting Unit. It equals the Total Timber Value (which includes Secondary Timber Products), minus K-V Essential Regeneration, minus FS Costs.

Next Harvest—Function key (F4) for processing another Harvest Entry on: (1) the Harvest Prescription (Existing Stand) screens, and (2) the screens for appraising Future Entries in the Existing Stand and all entries in the Regenerated Stand for processing another Harvest Entry.

Next Product—Function key (F4) available on the Current Entry appraisal screens for accessing Secondary Timber Products. They are accessed one at a time in the alphabetical order found in the default database.

Nonharvest Activities—Any planned land management activity not directly associated with a timber sale. These activities are entered on the Nonharvest Activities screen.

Nontimber Outputs—Any timber sale output, other than a Timber Product, that is either quantified or rated for Sale Alternatives. They are defined on the Select and Describe Nontimber Outputs screens and are entered on Quantify Nontimber Outputs or Rate Nontimber Outputs screens.

Other K-V—An item appearing in several output reports showing the amount of Nonharvest Activities cost financed with Knutson-Vandenberg funds. The K-V Funded portion of Nonharvest Activities cost is any amount up to K-V Available. The portion of K-V Funded, Nonharvest Activities cost exceeding K-V Available is assumed to be paid with appropriated dollars.

Other Rotations—Rotation following the First Rotation of the Regenerated Stand.

Output Name (Nontimber Output)—A user-entered name for identifying Nontimber Outputs. It is entered on the Select & Describe Nontimber Outputs screen.

Physical NT—An item on the management summary output tables referring to Nontimber Outputs that have been quantified.

Prescriptions—The type of management that has been designated for cutting units on the Harvest Prescriptions (Existing Stand) screen and the Regenerated Stand Prescription screen. Management actions include logging, site preparation, and regeneration methods as well as other planned activities and requirements.

Present Net Value (PNV)—Benefits (market prices and nonmarket values) discounted to a specified point in time, minus costs discounted to that same time.

Present Value—A dollar amount discounted to a specified point in time, referring to either benefits or costs.

Previous Harvest—Function key (F3) for accessing the previous Harvest Entry. Available on the Harvest Prescription (Existing Stand) screen, the Future Entry Appraisal (Existing Stand) screen, and the Regenerated Stand Appraisal screen.

Previous Product—Function key (F3) available on the Current Entry Appraisal (Existing Stand) screens for accessing the previous, alphabetically ordered Timber Product.

Price—A market price, as in the final Timber Product price per Unit of Measure for Primary Timber Product (lumber tally).

Primary Timber Product—The Timber Product identified on the Sale Description screen to be the main product of the proposed timber sale. This product is used as the basis for appraisals and other procedures. In RV appraisal, the primary timber product is selected directly, but in TE appraisal, it is determined by the TE model selected.

Profit & Risk—The allowance to the timber purchaser, calculated as a percentage of Price of the Timber Products. Used in Residual Value Appraisal. The default profit and risk percentage is specified by the TSPAS Information Manager.

Quantify Nontimber Outputs—An optional way of measuring Nontimber Output levels. Effects of Sale Alternatives on the physical amounts of Nontimber Outputs are quantified, using interval-scale measurements.

Ranked Nontimber Outputs—An optional way of measuring Nontimber Output levels. Effects of Sale Alternatives on the physical amounts of Nontimber Outputs are rated using the rank-order option.

Rated Nontimber Outputs—An optional way of measuring Nontimber Output levels. Effects of Sale Alternatives on the amounts of Nontimber Outputs are rated using relative comparison measures, such as ***, or +++, and ---.

Real Price and Cost Change—The average annual percentage rate of change over and above the general inflation rate.

Recovery—Also known as “overrun,” this is a ratio used to convert the Price per Unit of Measure in lumber tally to dollars per Unit of Measure in log scale. Computationally, it is the output volume of the Primary Timber Product in its Unit of Measure (for example, lumber tally), divided by the log input volume in its Units of Measure (log scale). Used in Residual Value Appraisal.

Regeneration Methods—Categories for types of regeneration to be used following harvest. They appear on the Harvest Prescriptions (Existing Stand) screen.

Regenerated Stand Management Costs—Any cost in a regenerated stand prescription not associated with a harvest. Cost types are specified by the TSPAS Information Manager.

Regenerated Stands—Future timber stands that follow the timber stands that currently exist on the Cutting Units in a Sale Alternative.

Residual Value Appraisal—An appraisal method in which the value of standing timber is estimated by subtracting all the costs associated with logging, hauling, and processing that timber from the value of the final Timber Product.

Road Maintenance Cost—The cost attributed to the timber sale of maintaining Forest Service “System” roads. Used in Residual Value Appraisal.

Rotation—A rotation refers to a “timber crop,” beginning with the establishment of the stand and ending with the last harvest of that stand.

Rx Description—Field on the Harvest Prescriptions (Existing Stand) screen for describing the prescription to be applied to that Cutting Unit. This is descriptive information only, not used in any calculations.

Sale Alternative—A proposed option (or alternative) for a the timber sale being planned.

Sale Alternative Data—Data that are entered on a Sale Alternative basis. These data are accessed through the Sale Alternative Data Menu.

Sale Characteristics—A section on the appraisal screens for displaying the logging method and regeneration category selected for that Cutting Unit on the Harvest Prescriptions (Existing Stand) screen.

Sale Data—Data that apply to all Sale Alternatives developed for a proposed timber sale. These data are accessed through the Sale Data Menu.

Sale Database—The database that stores the data for the proposed timber sale. This database is developed by the TSPAS user as an individual sale and alternatives are planned.

Sale Location—A field for recording the location of the proposed sale on the Sale Description screen. Since this information is not used analytically, any geographical reference (such as county) can be used.

Sale Name—The name given to the proposed sale on the Sale Description screen. This name is the key to entering and retrieving all information concerning this sale. Select this name carefully; once selected, it cannot be changed.

Sale Requirements—Activities required of the purchaser that are part of the timber sale contract. A portion of the Harvest Prescriptions (Existing Stand) screen is devoted to identifying these requirements. This list of up to 25 potential requirements is developed by the TSPAS Information Manager.

Sale Year—The year the proposed sale is expected to be sold.

Secondary Timber Products—Any Timber Product other than the Primary Timber Product specified on the Sale Description screen.

Site Preparation Methods—Categories for the cost of site preparation that is to follow harvest. These categories are defined by the TSPAS Information Manager and appear on the Harvest Prescriptions (Existing Stand) screen.

Skidding & Loading Costs—The costs associated with skidding and loading logs, expressed as dollars per Unit of Measure for Primary Timber Product. Used in Residual Value Appraisal.

Species—Categories of timber species. A category may contain one or more species. (Also called Timber Species).

Specified Roads—Roads that are specified for construction or reconstruction as part of a timber sale contract. These roads are part of the Forest Service's permanent road network and are ultimately paid for by the Forest Service, either through appropriated funds or Effective Road Credits. Though it is the purchaser's choice to construct these roads (for credits) or have the Forest Service construct them, the user indicates one of these options on the Road Costs screen.

Statistical High Bid—An estimate of the gross revenue that will be received from a Sale Alternative. It equals High Bid minus Effective Road Credits.

Stump-to-Mill Costs—The sum of all purchaser costs related to logging and hauling logs to a processing facility. It equals the sum of the following cost categories: Felling and Bucking Costs, Skidding and Loading Costs, Haul Costs, Environmental Protection Costs, Road Maintenance Costs, Temp Development Costs, and the dollar per Unit of Measure for Profit and Risk. Used in Residual Value Appraisal.

TEA Predicted Value—The predicted value of a transactions evidence equation. The TSPAS Information Manager specifies what type of value a Transaction Evidence Appraisal estimates.

TE Model—A set of adjustments or an equation used to predict the amount per Unit of Measure of Timber Product a buyer would be willing to pay for a timber sale. These adjustments or equations are based on information from past timber sales.

Temporary Development (Incl. Roads)—Includes all temporary development costs incurred by the purchaser. Used in Residual Value Appraisal.

Temporary Development (W/O Roads)—Includes all temporary development costs incurred by the purchaser, except for the cost of temporary roads. Used in Residual Value Appraisal.

Temporary Roads (Cost)—Includes any low standard road built by the timber purchaser that is not a Specified Road and will not become part of the permanent road system. Used in Residual Value Appraisal.

Timber Product—A final product produced from timber. Timber Products are specified by the TSPAS Information Manager. In Residual Value Appraisal, the user selects all Timber Products. In Transaction Evidence Appraisal, the user selects Secondary Timber Products, but the Primary Timber Product is determined when the TE Model is selected.

Timber Species—Categories of timber species. A category may contain one or more species (also called Species).

Timber Strata—Categories of timber harvest volumes for Regenerated Stands. Each strata consists of specific levels of up to four dimensions of a physical site, such as Timber Species, slope, and soil type. All strata are defined by the TSPAS Information Manager.

Transaction Evidence Appraisal—A method for appraising the value of timber in a sale that is based on the experience obtained in past timber sales.

TSPAS Information Manager (TIM)—The person or persons responsible for developing and maintaining the TSPAS default database.

Unit of Measure—The measurement units used to measure Timber Products or Nontimber Outputs. In the case of Timber Products, the unit of measure appearing on screens and reports is that of the Primary Timber Product selected by the user. All units of measure are specified by the TSPAS Information Manager.

Unit Size—The size in acres of a cutting unit.

Value—The dollar value per Unit of Measure for a Nontimber Output.

Volume—Harvest volume for the Primary Timber Product, measured in Unit of Measure for Primary Timber Product.

Appendix B: Data Needs Summary

A general listing of the various types of data or information the TSPAS_SP user must provide. The listing follows the order of the TSPAS_SP menu system.

I. Sale Data

A. Sale description

1. Sale location (such as forest, district)
2. Sale objectives and constraints
3. TE model, if sale uses transaction evidence for the existing stand
4. Analysis year
5. Sale year

B. Select and describe nontimber outputs

1. Output name
2. Determine if output is to be rated or quantified
3. For output rated
 - Unit of measure
4. For output quantified:
 - a. Unit of measure
 - b. Value per unit (optional)

C. Select and describe timber products

1. Timber product name
2. Unit of measure
3. Cubic feet per unit

II. Cutting Unit Data

A. Prescriptions for existing stand: the following information needed for the sale being planning and each subsequent entry in the existing stand

1. Size of cutting unit
2. Harvest entry year
3. Logging method (residual value appraisal only)
4. Site preparation category
5. Regeneration category

B. Appraise the cutting unit for the current sale

1. Residual value method

- a. Enter the following information by timber species
 - Harvest volume for the cutting unit
 - Product price
 - Recovery factor in percent
 - Manufacturing cost
- b. Felling and bucking costs
- c. Skidding and loading costs
- d. Haul costs (without road maintenance)
- e. Environmental protection costs
- f. Temporary development costs (without temporary roads)
- g. Profit and risk percentage
- h. Essential regeneration costs
- i. Bid premium

2. Transaction evidence method
 - a. Enter the following information by timber species
 - Harvest volume for the cutting unit
 - The amount for any transaction evidence adjustors or variables whose values are entered by species
 - b. Planned number of cutting units in the sale
 - c. The amount for each transaction evidence adjustor or variable
 - d. TE cost adjustor data ("High Bid" is calculated by subtracting these cost adjustors from the value predicted directly by the transaction evidence approach)
 - e. Essential regeneration costs
- C. Appraisal information for secondary timber products sold in the timber sale: Enter the following information for each cutting unit
 1. Volume to be removed
 2. Minimum bid rate
 3. Essential regeneration
 4. Indicated advertised rate
 5. High bid
- D. Appraise future harvest entries planned for the existing stand on the cutting unit
 1. Residual Value
 - a-c. Same as II.B.1
 - d. Haul costs (include road maintenance)
 - e. Same as II.B.1
 - f. Temporary development costs (include temporary roads)
 - g-j. Same as II.B.1
 - k. Specified road costs
 2. Transaction evidence method
 - a-e. Same as II.B.2
 - f. Specified road costs
 - g. USFS costs
- E. Regenerated stand prescription
 1. Regenerated stand timber strata
 2. Management intensity
 3. Logging method (residual value appraisal only)
 4. Stand management costs (if any)
- F. Appraise harvest entries planned for the regenerated stand on the cutting unit
 1. Residual Value
 - a-c. Same as II.B.1
 - d. Haul costs (include road maintenance)
 - e. Same as II.B.1
 - f. Temporary development costs (include temporary roads)
 - g-j. Same as II.B.1
 - k. Specified road costs

2. Transaction evidence method
 - a-e. Same as II.B.2
 - f. Specified road costs
 - g. USFS costs

III. Sale Alternative Data (data entered for each sale alternative)

- A. Quantify nontimber outputs: enter the following information for any nontimber outputs to be quantified in analyzing the timber sale.
 1. Average annual quantity of output per decade occurring in the area of influence *with* the proposed sale alternative
 2. Average annual quantity of output per decade occurring in the area of influence *without* the proposed sale alternative
- B. Rate nontimber outputs: Qualitative rating of sale alternatives regarding their production of user-specified nontimber outputs
- C. Non-harvest activities
 1. Description of activity
 2. Year (s) for the activity
 3. Cost of the activity (per acre or total)
 4. Primary output associated with the activity
 5. Funded by K-V? (y/n)
- D. Road Costs
 1. Road construction (purchaser or Forest Service)
 2. Specified road costs
 3. Temporary road costs (residual value appraisal only)
 4. Road maintenance costs (residual value appraisal only)
 5. Road cost savings (by cutting unit)
- E. Harvest Rates and Forest Service Costs
 1. Harvest entry year(s) for sale being planned
 2. Percent of volume harvested in year(s) specified in III.E.1
 3. Forest Service costs for sale preparation and administration
 4. Year(s) Forest Service costs in III.E.3 occur

Appendix C: Error Messages

A list of error and warning messages that can be encountered as TSPAS_SP is executed. The messages are bolded and ordered alphabetically. Asterisks (*****), at signs (@@@@@), and pound signs (#####) represent instance-specific words, phrases, or numbers in the actual message viewed on the screen. Error messages are followed by an explanation, prevention, or remedy as appropriate.

******* does not exist**

(***** represents a **file name**.) Attempting to access a file (*****) that does not exist. Select INDEX for a list of valid files available.

Alternative specified already exists

Attempting to copy one alternative into an alternative that already exists under this sale name. When copying alternatives, a new alternative name must be specified for the destination.

Alternative/cut unit specified already exists

Attempting to copy one alternative/cut unit combination into an alternative/cut unit combination that already exists under this sale name. When copying, a new alternative/cut unit combination must be specified for the destination.

Alternative specified does not exist

Specifying an alternative that has not been defined for this sale. Either re-enter the alternative or first define it. Completing a prescription for the alternative and at least one cut unit defines the alternative. An alternative is also defined when any of the information in the Sale Alternative Data menu is completed.

Alternative/cut unit specified does not exist

Specifying an alternative/cut unit combination that has not been defined for this sale. Either re-enter the alternative/cut unit combination or first define it. Completing a prescription for the alternative/cut unit combination specified defines the combination.

Analysis year must be between ##### & @@@@ (Default Databs base yr & Sale year)

(##### represents **Default Database base year**, and @@@@ represents **Sale year**.) Analysis year specified was less than the default database base year or greater than the sale year. Analysis year must be greater than or equal to the default database base year and less than or equal to the sale year. These values are provided.

Analysis year must be between ##### & @@@@ (Model base yr & Sale year)

(##### represents **Model base year**, and @@@@ represents **Sale year**.) Analysis year specified was less than the TE model base year or greater than the sale year. Analysis year must be greater than or equal to the TE model base year and less than or equal to the sale year. These values are provided.

Analysis year must be at least ##### (Default Database base year)

(##### represents **Default Database base year**.) Analysis year specified was less than the default database base year. Analysis year must be greater than or equal to the default database base year. This value is provided.

Analysis year must be at least #### (TE model base year)

(#### represents **TE model base year**.) Analysis year specified was less than the TE model base year. Analysis year must be greater than or equal to the TE model base year. This value is provided.

Attempting to rename *** to XXXXXXXX##—adjustor variable exceeds max**

(***** represents a **TE model adjustor/variable name** and **XXXXXXXX##** is the new adjustor/variable name where ## is a number from 01 to 99.) During either a default database or a single TE model import, TSPAS_SP detected two problems, one of which was fatal. First, TSPAS_SP encountered a TE model adjustor/variable that exists on the local system's list, but with a different type specified. Under this situation, TSPAS_SP changes the name of the imported adjustor/variable to a generic 'XXXXXXXX##', to maintain data integrity (for example, XXXXXXXX01). As TSPAS_SP attempted to rename the adjustor/variable and add to the system's list of adjustors/variables the maximum of 99 was reached. TSPAS cannot support more than 99 adjustors/variables among all the TE models contained on the system and this terminated the import procedure. To successfully complete the import, unused adjustors/variables must be deleted using TSPAS_DDP.

Cannot alter a saved *** name**

(***** represents '**nontimber output**', or '**timber product**'.) Attempting to edit a saved ***** name. Previously entered nontimber output and timber product names cannot be altered. This error also occurs when INDEX is selected on a saved name. (NOTE: Any ***** names entered, but not yet saved can be altered.)

Complete this *** or press CANCEL/EXIT**

(***** represents a **field, window, or form**.) Attempting to leave the field, window, or form without providing information for all data requests. All data must be provided before pressing EXECUTE. Alternatively, press CANCEL/EXIT to exit without changes.

Complete this *** or press INDEX or CANCEL/EXIT**

(***** represents a **field, window, or form**.) Attempting to leave the field, window, or form without providing information for all data requests. All data must be provided before pressing EXECUTE. Alternatively, press INDEX for a list of valid entries or CANCEL/EXIT to exit without changes.

Complete this field, press EXECUTE or press CANCEL/EXIT

Attempting to leave either a nontimber output or timber product field without providing a name. This information must be provided before continuing. Alternatively, select CANCEL/EXIT to exit without changes.

Contract length must be at least ## (max harvest year + 1)

(## represents the **maximum harvest year + 1**.) Attempting to alter contract length after harvest rates have been specified. If harvest rate information were in years 0, 1, and 2, the contract length could not be less than "3" for the 3 years listed. The contract length must be greater than or equal to ##, the maximum harvest entry specified plus one.

Contract length must be between ## & @@ (max harvest year+1 and min future entry)

(## represents **maximum harvest year + 1** and @@ represents **maximum harvest year + 1**.) Attempting to alter contract length after

cutting unit prescriptions and harvest rates have been specified. The contract length must be greater than or equal to ##, the maximum harvest year in the harvest rate information plus one. (If the harvest rate information were in years 0, 1, and 2, the contract length could not be less than "3" for the 3 years listed.) The contract length also must be less than @@, the earliest year specified in the future entries for the existing stand for this alternative. (Note: if future entries are added to the existing stand prescription AFTER the contract length has been specified, it is possible to specify a future harvest occurring before the maximum harvest year in the harvest rate information. For example, suppose, max harvest = 3 and min future entry = 2. Contract length would need to be greater than 4, but less than 2. The only remedy for this infeasibility is to delete the earliest future entry, change the contract length to an acceptable value, and then reenter the future entry information that was deleted.)

Database Version Mismatch. Local DDP:***/SP:***** Import**

DDP:@@@@@/SP:@@@@@

(**** represents the TSPAS_DDP and TSPAS_SP version on the local system, @@@@@ represents the TSPAS_DDP and TSPAS_SP version on the import file.) Attempting to import either a default database or a single equation with an incompatible version of TSPAS_SP. The import file was created using the @@@@@ version of TSPAS_DDP/TSPAS_SP, while the local system has version *****. The database's internal structure has changed; these versions of TSPAS are incompatible. The import file cannot be read with the local version on TSPAS.

Data larger than specification

The number entered for the current field exceeds the maximum value acceptable for that field.

Decade of *** output must be greater than decade of first inflection**

(**** represents **maximum** or **minimum**.) In drawing a nontimber output curve, the decade specified for the maximum (or minimum) output quantity was less than the decade of first inflection. The decade for maximum (or minimum) output quantity must be greater than the decade of first inflection and less than or equal to 30.

Decade of *** output must be less than 30**

(**** represents **maximum** or **minimum**.) In drawing a nontimber output curve, the decade specified for the maximum (or minimum) output quantity was greater than 30. The decade for maximum (or minimum) output quantity must be greater than the decade of first inflection and less than or equal to 30.

Decade of first inflection must be less than 30

In drawing a nontimber output curve, the decade specified for the first inflection point was greater than 30. All decades specified for nontimber outputs must be greater than zero and less than or equal to 30.

Decade of first inflection must be greater than zero

In drawing a nontimber output curve, the decade specified for the first inflection point was less than or equal to zero. All decades specified for nontimber outputs must be greater than zero and less than or equal to 30.

Decade of discontinuity must be greater than zero

In drawing a nontimber output curve, the decade specified for where the curve breaks (point of discontinuity) was less than or equal to zero. All

decades specified for nontimber outputs must be greater than zero and less than or equal to 30.

Decade of discontinuity must be less than 30

In drawing a nontimber output curve, the decade specified for where the curve breaks (point of discontinuity) was less than or equal to zero. All decades specified for nontimber outputs must be greater than zero and less than 30.

Decade of second inflection must be greater than decade of *** output**

(***** represents **max** or **min**.) In drawing a nontimber output curve, the decade specified for the second inflection point was less than the decade of maximum (or minimum) output. The decade for the second inflection must be greater than the decade for maximum (or minimum) output and less than or equal to 30.

Decade of second inflection must be less than 30

In drawing a nontimber output curve, the decade specified for the second inflection point was greater than 30. The decade for the second inflection must be greater than the decade for maximum or minimum output and less than 30.

Default Database for sale specified not locked. Cannot access sale

Attempting to access a sale whose associated default database is not currently locked. The default database must be varified and locked in TSPAS_DDP before TSPAS_SP can access the sale specified.

Default Database specified does not exist

Specifying a default database name that has not been defined in the TSPAS default database. Press INDEX for a list of default database names.

Default Database specified already exists

Attempting to import a default database onto the local system. This default database already resides on the local system and cannot be imported.

Default Database specified not locked

Specifying a default database that does exist in the TSPAS default database, but is not currently locked. TSPAS_SP can only access verified and locked databases.

Error detected in import file. Import terminated

While importing either a default database or a single TE model, TSPAS_SP detected a fatal error that caused termination of the import procedure. The error and/or other warnings have been written to a file. The import error file follows the following naming convention: Databasename.IMP.ERR or Databasename.TEmodelname.IMP.ERR.

Error detected in import file. Import terminated

Attempting to import more than 900 TE models

Importing a new TE model into the local system will exceed the maximum. TSPAS cannot support more than 900 TE models across all TSPAS default databases. This error can be encountered when importing a single model or when importing a default database containing one or more models. To successfully complete the import, delete outdated models from the default databases using TSPAS_DDP.

Error detected in import file. Import terminated

Attempting to read string "eqnct." Instead reading *****

(***** represents the group of **characters** TSPAS_SP import found.) TSPAS_SP import procedure expected to encounter the character string: "eqnct." Instead ***** was found. The import file does not follow the procedure's format and cannot be read. The contaminated import file should be deleted and retrieved again. If re-retrieving the file does not alleviate the error, the file is contaminated at the source and needs to be exported from TSPAS_DDP again.

Error detected in import file. Import terminated

Attempting to read table *****

Tablename = @@@@

(***** represents 'TSPAS_MNGR_ID' or 'TSPAS_SUTE_NAME_ID' and @@@@ represents the group of **characters** TSPAS_SP import found.) TSPAS_SP import procedure expected to encounter ***** in the import data file, but instead found @@@@. The import file does not follow the procedure's format and cannot be read. The contaminated import file should be deleted and retrieved again. If re-retrieving the file does not alleviate the error, the file is contaminated at the source and needs to be exported from TSPAS_DDP again.

Error detected in import file. Import terminated

Attempting to rename *** to XXXXXXXX##**

New adjustor/variable exceeds maximum of 99

(***** represents a **TE model adjustor/variable name** and XXXXXXXX## is the new adjustor/variable name where ## is a number from 01 to 99.) During either a default database or a single model import, TSPAS_SP detected two problems, only one of which was fatal. First, TSPAS_SP encountered a TE model adjustor/variable that exists on the local system's list, but with a different type specified. Under this situation, TSPAS_SP changes the name of the imported adjustor/variable to a generic 'XXXXXXX##', to maintain data integrity (for example, XXXXXXXX01). As TSPAS_SP attempted to rename the adjustor/variable and add to the system's list of adjustors/variables, the maximum of 99 was reached. TSPAS cannot support more than a total of 99 adjustors/variables among all the TE models contained on the system and this terminated the import procedure. To successfully complete the import, unused adjustors/variables must be deleted using TSPAS_DDP.

Error detected in import file. Import terminated

Last table name string read: *****

(***** represents the group of **characters** TSPAS_SP import found.) TSPAS_SP import procedure expected to encounter a particular string of characters, but did not. The string, *****, was the last data table successfully read and is included to provide a clue to the problem. The import file does not follow the procedure's format and cannot be read. The contaminated import file should be deleted and retrieved again. If re-retrieving the file does not alleviate the error, the file is contaminated at the source and needs to be exported from TSPAS_DDP again.

Error detected in import file. Import terminated**New ***** exceeds the maximum of ##**

(***** represents 'product for TE model,' 'species for TE model,' 'TE model,' or 'TE model adjustor/variable' and ## represents '99,' '900,' '999' depending on the error.) Importing a new ***** into the local system will exceed the maximum. The import procedure cannot continue. For timber product and species, attempting to import a single model under an existing database. If this TE model is imported, TSPAS_SP must add timber products or species included in the model, but missing on the default database's list. With this addition, the products or species exceeds the upper limit of 999 for this default database. This model cannot be imported under the default database specified. For 'TE model' or "TE model adjustor/variable," this error is encountered when importing a single model or when importing a default database containing one or more models. TSPAS cannot support more than a total of 900 TE models total and 99 adjustors/variables total among those TE models. To successfully complete the import, outdated models from the default databases or unused adjustors/variables must be deleted using TSPAS_DDP, as appropriate.

Error opening *** with status = #**

(***** represents a **report file** or **import file**.) While attempting to access the existing report or import file, *****, TSPAS_SP detected an error. This file is corrupt and needs to be replaced.

File specified does not exist. Press INDEX for a list of existing files

Attempting to access a file that does not exist. Retype the file name or select INDEX for a list of valid file names.

File specified not a *** import file**

(***** represents 'default database', or 'TE model'.) Attempting to import a file that exists, but is not recognized by TSPAS_SP as an appropriate import file. Default database import files are labelled Databasename.IMPORT and TE model import files are labelled Databasename.TEmodelname.IMPORT.

Final decade must be greater than decade of discontinuity

In drawing a nontimber output curve, the decade specified for the final output projection was less than the decade specified for the curve's discontinuity. The final decade must be greater than the decade specified for the point of discontinuity and less than or equal to 30.

Final decade must be greater than decade of inflection

In drawing a nontimber output curve, the decade specified for the final output projection was less than the decade of inflection. The final decade must be greater than the decade of inflection and less than or equal to 30.

Final decade must be greater than decade of second inflection

In drawing a nontimber output curve, the decade specified for the final output projection was less than the second inflection decade. The final decade must be greater than the decade of second inflection and less than or equal to 30.

Final decade must be greater than 1

In drawing a nontimber output curve, the decade specified for the final output projection was less than or equal to one. The final decade must be greater than one and less than or equal to 30.

Final decade must be less than or equal to 30

In drawing a nontimber output curve, the decade specified for the final output projection was greater than 30. The final decade must be greater than one and less than or equal to 30.

Final harvest on display

Attempting to move past the last harvest entry prescription defined for the alternative/cut unit combination specified.

First entry in regenerated stand on display

Attempting to move to an earlier entry in the regenerated stand appraisal information. The entry on display is the earliest regenerated stand entry for the alternative/cut unit combination specified.

First future entry in the existing stand on display

Attempting to move to an earlier future entry in the existing stand appraisal information. The entry on display is the earliest future entry in the existing stand for the alternative/cut unit combination specified.

First harvest on display

Attempting to move to an earlier harvest entry in the existing stand prescription information. The entry on display is the earliest harvest entry defined for the alternative/cut unit combination specified.

First line on display

Attempting to move above the first item of a list. There are no previous items on this list.

First timber product on display

The timber product selected as the primary product for this sale is on display. There are no products previous to this one.

Function not available

The function key pressed is not available in the current version of TSPAS_SP.

Function not currently valid

The function key selected cannot be used in the current context or environment, or in the current section of the screen. The function may be valid on other screens, or on other parts of this screen.

Future entries do not exist for specified alternative/cut unit

Attempting to access the future entry appraisal information for the alternative/cut unit combination specified. This alternative/cut unit combination has only the existing stand prescription defined with no future entries specified.

Harvest year cannot exceed ## (contract length-1)

(## represents **one less than contract length**.) Attempting to specify a year for harvest entry greater than contract length minus one. If contract length equals 3, then harvest entries can occur in years 0, 1, and 2. Note, this is 3 years. The years specified in the harvest rates must be greater than zero and must be less than the contract length minus one.

Harvest year must be at least zero

The year specified for the harvest year was less than zero. Harvest year must be greater than or equal to zero and less than contract length-1.

Hyphen at the end of year list has no year associated with it

TSPAS_SP has detected a hyphen (-) without an accompanying year located at the end of the number string.

Hyphen has no year associated with it -*

(* represents **comma, hyphen, or space**.) TSPAS_SP has detected a hyphen (-) without an accompanying year. The * displays the next character in the number string to aid in fixing the problem.

Hyphen permitted only for a negative year. Above read as # to @

(# and @ represent a **number**.) TSPAS_SP has detected a hyphen (-) between two numbers that cannot be processed. TSPAS_SP prohibits a set of numbers being entered as "2-5" (meaning 2,3,4,5). The hyphen (-) is reserved for designating negative years (years before the sale year).

Incremental road cost cannot exceed total road cost: #####

(##### represents the **total road cost**.) Attempting to allocate more than the total road cost to one cutting unit. The incremental road cost for the current cutting unit must be changed or the total road costs need adjusting.

Invalid character: '*'. Valid characters are 0 thru 9, comma, space, minus

(* represents the **invalid character**.) TSPAS_SP encountered an undefined character while processing a list of years. TSPAS_SP will accept only numerical digits zero (0) through nine (9), comma (,), space (), or hyphen (-).

Invalid character: * at position # in the following: @@@@

(* represents the **invalid character**, # represents the **position of the character**, and @@@@ represents **data specified**.) TSPAS_SP encountered an undefined character while processing a data request (such as sale name or alternative name). The character in question is given by *; it is located in the character string @@@@ in position #. TSPAS_SP will accept the following characters: lower-case letters (a-z), upper-case letters (A-Z), numbers (0-9), dollar sign (\$), period (.), question mark (?), and underscore (_).

Invalid choice for *****

(***** represents '**logging method**,' '**management intensity**,' '**regeneration method**,' '**site preparation**,' '**specified road construction**,' or @@@@ which represents the **logging cost category** specified in the default database.) Attempting to specify a choice for ***** that is undefined. Valid choices for ***** are listed along with the data request. Re-enter choice before continuing.

Invalid rank: rank must be between 1 and #

(# represents the number of **total sale alternatives**.) Attempting to rank an alternative, in an ordinal ranked nontimber output, with an invalid value. Ranks must be greater than zero and less than or equal to the total number of alternatives.

Invalid rating symbol

Attempting to use an undefined symbol in rating alternatives for the nontimber output specified. Outputs must be rated with only the scales specified at the left.

Invalid strata. Alter strata or press CANCEL/EXIT

Attempting to specify a timber strata that was not defined in the default database chosen. Strata must be altered before continuing. INDEX on each strata field provides a list of valid strata available for that field. Alternatively, select CANCEL/EXIT to exit without changes.

Invalid year: ####. Enter years in terms of “number of years FROM” sale year

(#### represents a year.) Attempting to enter a year greater than 1000, such as year “2020.” Years in TSPAS_SP are counted from the sale year.

Last entry in regenerated stand on display

Attempting to move beyond the last entry in the regenerated stand appraisal information. The entry on display is the final entry in the regenerated stand for the alternative/cut unit combination specified.

Last future entry in existing stand on display

Attempting to move beyond the last future entry in the existing stand appraisal information. The entry on display is the final future entry in the existing stand for the alternative/cut unit combination specified.

Last line on display

Attempting to move past the last item of a list. There are no more items on this list.

Last timber product on display

Attempting to move beyond the last, alphabetically ordered, secondary product defined for this sale. There are no products beyond the one being displayed.

Model *** already exists in Default Database**

(***** represents a **model name**.) Attempting to import a TE model for the specified default database. This database already contains a model having the name *****, and cannot accept the model being imported.

Model base yr > year sold. Select another model, or change year sold first

Attempting to alter the sale’s TE model after sale year has been specified. The base year for the new TE model is greater than the sale year specified. Before this TE model can be selected, sale year must be changed to a value greater than or equal to this model’s base year. Alternatively, another model having a base year less than or equal to sale year can be selected.

Model base yr > analysis yr. Select another model, or change analysis yr first

Attempting to alter the sale’s TE model after analysis year has been specified. The base year for the new TE model is greater than the analysis year specified. Before this TE model can be selected, analysis year must be changed to a value greater than or equal to this model’s base year. (This may also involve changing the sale year as well since analysis year must be less than or equal to sale year.) Alternatively, another model having a base year less than or equal to analysis year can be selected.

Model specified does not exist

Specifying a TE model for the current stand appraisal that has not been defined in the default database chosen. TSPAS_SP will not continue until a valid TE model is specified or CANCEL/EXIT is chosen. INDEX provides a list of the TE models available.

Model specified has not been saved in TSPAS_DDP

Specifying a TE model for this sale that exists in the default database chosen, but has not been saved. TSPAS_SP can only access saved TE models.

Move cursor to table, then press C-F1 to graph output levels

Attempting to select GRAPH INPUT before entering the main body of the table. This function can only be used inside the table.

New alternative exceeds the maximum of 20

Attempting to define a new alternative that will exceed the maximum. TSPAS_SP cannot support more than 20 sale alternatives for any given sale.

New cutting unit exceeds the maximum of 200

Attempting to define a new cutting unit under the alternative specified that will exceed the maximum. TSPAS_SP cannot support more than 200 cutting units for any given sale alternative.

New Default Database exceeds the maximum of 99

Importing a new default database into the local system will exceed the maximum. TSPAS cannot support more than 99 default databases.

New product for TE model exceeds the maximum of 999

Attempting to import a new TE model into the default database specified. TSPAS_SP encountered a timber product that was included in the model, but missing on the default database's list. With this addition, the timber products exceed 999, the maximum supported by TSPAS_SP. This model cannot be imported into the default database specified.

New species exceeds the maximum

Attempting to import a new TE model into the default database specified. TSPAS_SP encountered a species that was included in the model, but missing on the default database's list. With this addition, the species exceed 999, the maximum supported by TSPAS_SP. This model cannot be imported into the default database specified.

New TE model exceeds the maximum of 900

Importing a new TE model onto the local system will exceed the maximum. TSPAS cannot support more than 900 TE models across all TSPAS default databases.

New TE model adjustor/variable exceeds the maximum of 99

Attempting to either import a new TE model into the default database specified or import a default database containing one or more TE models. TSPAS_SP encountered an adjustor/variable that was included in the model, but missing on the local system's master list. With this addition, the adjustor/variable exceeds 99, the maximum supported by TSPAS_SP. To successfully import, unused adjustors/variables must be deleted using TSPAS_DDP.

No cut unit data exists for specified alternative

Attempting to access STATUS, or enter appraisal information, or enter regenerated stand prescription information for an alternative that exists, but has no cutting unit prescriptions specified. Cutting unit prescriptions must first be completed for this alternative before these data can be specified.

No harvest entry in regenerated stand for specified alternative/cut unit

Attempting to access the regenerated stand appraisal information for the specified alternative/cut unit combination. This alternative/cut unit combination has been defined, but does not have a regenerated stand prescription associated with it. Thus, no regenerated stand appraisal information to access.

No nontimber outputs to be *****

(***** represents 'quantified', or 'rated'.) Attempting to quantify a nontimber output when either no nontimber outputs have been defined or the nontimber outputs defined have been marked to be rated. Alternatively, attempting to rate a nontimber output when either no nontimber outputs have been defined or the nontimber outputs defined have been marked to be quantified.

No other timber products defined

Attempting to access secondary timber products from the existing stand appraisal. Only the primary timber product has been specified. There are no secondary timber products to access.

No sale currently active. Switch to another sale or press QUICK-OFF

Attempting to leave the Utility Menu after deleting the currently active sale. TSPAS_SP cannot proceed until another sale is activated. Either switch to another sale using the Utility Menu option or select QUICK-OFF.

Output in decade # must be at least zero

(# represents a **decade number**.) In drawing a nontimber output curve, the nontimber output quantity specified was less than zero. All nontimber output quantities must be greater than or equal to zero.

Output in decade # must be greater than zero

(# represents a **decade number**.) In drawing a nontimber output curve, the nontimber output quantity specified was less than or equal to zero. Nontimber output quantities must be greater than zero.

Output in decade # must be greater than output in decade 1

(# represents a **decade number**.) In drawing a nontimber output curve, the nontimber output quantity specified was less than the output quantity specified in decade one. The nontimber output quantity must be greater than the output specified in decade one.

Output in decade # must be less than output in decade 1

(# represents a **decade number**.) In drawing a nontimber output curve, the nontimber output quantity specified was greater than the output quantity specified in decade one. The nontimber output quantity must be greater than the output specified in decade one.

Output in decade # must be less than output in decades 1 and @

(# and @ represent **decade numbers**.) In drawing a nontimber output curve, the nontimber output quantity specified for decade # was greater than the output quantities specified in decade 1 and/or decade @. The nontimber output quantity must be between the quantities specified for decade 1 and decade @.

Output specified does not exist

Attempting to specify an output that has not been defined for this sale. Re-enter output or select INDEX for a list of outputs.

Output specified not chosen for rating

Attempting to rate an output that has been marked as quantified on the Describe Nontimber Output screen.

Output specified not chosen for quantifying

Attempting to quantify an output that has been marked as rated on the Describe Nontimber Output screen.

Percentage of volume harvested exceeds 100%

Attempting to specify harvest rates that exceed 100 percent of the volume harvested.

Please enter "Q" or "R"

Attempting to specify whether a nontimber output is to be quantified or rated with some character other than "Q" or "R". TSPAS_SP will only accept "Q," "q," "R," or "r."

Please enter a number between # and @

(# and @ represent **numbers**.) Attempting to specify a menu choice with some character other than a number between # and @. The choice must be greater than or equal to # and less than or equal to @.

Please enter "y" or "n"

Attempting to answer a question with some character other than a "y" or "n." TSPAS_SP will only accept "Y," "y," "N," or "n."

Primary timber product does not exist

Specifying a timber product that was not defined in the chosen default database. Primary timber products are restricted to the products included in the default database. Selecting INDEX displays the list of possible products. (NOTE: Timber products that were added in the Select & Describe Timber Products are not eligible for primary product designation.)

Printer not specified. Select Set Default Printer from Utilities Menu

Attempting to print a report file when no printer has been specified. The file cannot be sent to a printer until the printer information has been provided. This information is specified in the Set Default Printer screen accessed through the Utility Menu.

REGEN STD reserved for regenerated stand

Attempting to specify model "REGEN STD" as the existing stand model. This model name (REGEN STD) is reserved for the regenerated stand model only.

Regenerated stand entries do not exist for specified alternative/cut unit

Attempting to access the regenerated stand appraisal information for the alternative/cut unit combination specified. The regenerated stand prescription information has not been provided for this alternative/cut unit combination.

Sale: *** now in effect**

(***** represents a **sale name**.) Switching the currently active sale. TSPAS_SP alerts the user when another sale (*****) becomes currently active.

Sale description information missing. Select Sale Data from Main Menu

The sale description screen must be completed prior to making entries on this screen.

Sale specified already exists

Attempting to copy a sale into another sale that already exists. When copying sales, a new sale name must be specified for the destination sale.

Sale specified does not exist

Attempting to copy the sale specified into another. The sale specified is not present in the sale database, and cannot be the source of the copy.

Sale year must be at least #### (Analysis year)

Sale year specified was less than the analysis year. Sale year must be greater than or equal to analysis year ####.

Species specified does not exist

Specifying a species in the appraisal information that has not been defined in the default database associated with the sale. TSPAS_SP will only accept species listed in the default database. Press INDEX for a list of valid species.

Strata does not exist

Specifying a timber strata for the regenerated stand prescription that was not defined in the default database. Select INDEX for a list of defined strata combinations associated with this default database.

TE information incomplete. Enter value for estimated units or select CANCEL/EXIT

Attempting to move from the appraisal screen being displayed without first completing the information requests. Complete the appraisal information before moving to the next product, next entry, or selecting EX-ECUTE. Alternatively, select CANCEL/EXIT to exit without changes.

Terminal does not have graphical capabilities

Attempting to access the graphical input option in quantifying a non-timber output. TSPAS_SP does not recognize the monitor being used as a graphical monitor. The graphics capabilities provided in TSPAS_SP cannot be accessed using this monitor.

WARNING: Adjustor/variable *** in model @@@@ renamed
XXXXXXXX## (adjustor/variable exists in local database with
a different type.)**

(***** represents a TE model adjustor/variable name, @@@@ represents the model name and XXXXXXXX## is the new adjustor/variable name where ## is a number from 01 to 99.) During either a default database or a single model import, TSPAS_SP encountered a TE model adjustor/variable that exists on the local system's list, but with a different type specified. Under this situation, TSPAS_SP changes the name of the imported adjustor/variable to a generic 'XXXXXXXX##,' to maintain data integrity (for example, XXXXXXXX01). All imported model information is changed to use the new adjustor/variable name. This situation should be investigated.

WARNING: Cut units may need to be reappraised

Attempting to alter the sale's TE model after alternative/cut unit combinations have been defined. Additional appraisal information may need to be entered.

WARNING: Inconsistent rating symbol. Output may be invalid

TSPAS_SP found more than one rating method being used in rating the alternatives for the nontimber output specified. Use only one rating method for each nontimber output.

WARNING: Input data larger than field

TSPAS_SP has encountered a value, either directly entered or calculated, that exceeds the maximum value acceptable to the field. TSPAS_SP fills the problem field with stars (****).

WARNING: No cut unit data exists for specified alternative

The alternative specified has no cut unit data present in the sale database. Entering cut unit data first is not mandatory, but TSPAS_SP issues a warning when this situation occurs.

WARNING: Previously appraised cut units may be inaccurate w/product change

Attempting to alter the primary product specified after alternative/cut unit combinations have been defined. Appraisal information for the current and future entries into the existing stand may be incorrect with this change. All appraisal information entered to date should be examined for accuracy.

WARNING: Previously entered data may be inaccurate with analysis year change

Attempting to alter the analysis year for this sale after alternative/cut unit combinations have been defined. Cost and price information may be incorrect with this change. All cost and price information entered to date should be examined for accuracy.

WARNING: Units differ for ***—Local units: @@@@ Import units: ##### Local units kept, but import model: \$\$\$\$ based on import units.**

(***** represents a **TE model adjustor/variable name**, or **timber product**, @@@@ represents **units** specified in the local database, ##### represents **units** specified in the import file, and \$\$\$\$ represents the **TE model name**.) During a single model import, TSPAS_SP encountered either a TE model adjustor/variable or timber product that exists on the local system's list, but with different units specified. Under this situation, TSPAS_SP does not adjust any imported or local information, but continues with the import as if the units were identical. Note, however, all imported TE information was originally based on a different unit. Imported data may now be inaccurate under the local units. This situation should be investigated.

Warnings and/or errors found in import written to *****

(***** represents a **file name**.) TSPAS_SP encountered errors and/or warnings during the import procedure and sent expanded messages to file *****. The file naming convention is Databasename.IMP.ERR (default database import) and Databasename.TEmodelname.IMP.ERR (single TE model import). The expanded errors and warnings are listed in this appendix.

Year must be at least zero

Attempting to enter a negative value for year. In this location, years must be greater than or equal to zero.

Year specified already exists. Press PREV or NEXT SCREEN to access entry

A prescription for the harvest entry year specified has already been defined for this alternative/cut unit combination. Use PREV SCREEN or NEXT SCREEN to access the specified harvest, or enter a unique value for year.

Schuster, Ervin G.; Jones, J. Greg; Meacham, Mary L.; Cahoon, Rick D. 1995. Timber Sale Planning and Analysis System: A user's guide to the TSPAS Sale Program. Gen. Tech. Rep. INT-GTR-321. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 74 p.

Presents a guide to operation and interpretation of TSPAS Sale Program (TSPAS_SP), a menu-driven computer program that is one of two programs in the Timber Sale Planning and Analysis System. TSPAS_SP is intended to help field teams design and evaluate timber sale alternatives. TSPAS_SP helps evaluate current and long-term timber implications along with associated nontimber outputs. Features include multiple entries and products, real value change, and graphical input. Guide includes user instructions, a glossary, a listing of data needs, and an explanation of error messages.

Keywords: timber management, stumpage appraisal, TSPIRS, timber sales, nontimber output, sale planning

Other works . . . by the same authors, and still available from the Intermountain Research Station:

Schuster, Ervin G.; Leefers, Larry A.; Thompson, Joyce E. 1993. **A guide to computer-based analytical tools for implementing National Forest Plans. General Technical Report INT-296:** This guide presents results of an inventory of 250 computer-based tools that can be used to implement National Forest Plans, including tools used in budgeting, cumulative effects analysis, economic/financial analysis, ecosystem analysis, legal documentation, logging systems analysis, monitoring, resource effects or production estimation, resource scheduling, spatial analysis, and transportation analysis. A description provided for each tool includes its purpose, computer requirements, and other details. Five indexes help identify tools for particular types of analysis. The guide is 269 pages.

Schuster, Ervin G.; Niccolucci, Michael J. 1989. **Predicting timber sale costs from sale characteristics in the Intermountain West. Research Paper INT-406:** This 9-page paper presents a simple, equation-based method to estimate timber sale costs. Data were obtained from timber sales on National Forests in the Intermountain West. Equations were estimated by Seemingly Unrelated Regression.

Schuster, Ervin G.; Zuuring, Hans R. 1994. **User's guide to INVEST V: a computer program for economic analysis of forestry investment opportunities. General Technical Report INT-GTR-312:** INVEST V is a computer program to help evaluate forestry projects and programs as alternative investment opportunities. It operates on the Forest Service's Data General computer system and any IBM-compatible microcomputer. The guide presents an overview of INVEST V, describes data organization and program features, and includes examples of data input and output. The guide is 37 pages.

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